Stock update

150
145 — S&P's 500 stock index
140
135
130
125
120 — CW stock index
115
110

Aug 20 — Aug 27 — Sept 3 — Sept 10

CW Chart

Stock charts in full, page 133

Product Spotlight
PC modeling software:
Beyond the spreadsheet/**47**

In Depth
Why build a new system?/**71**

NEWSPAPER

Compaq unveils 80386-based micro

Users argue power, standards issues; await IBM action

By Douglas Barney

NEW YORK — Looking to shed its clone image and preempt IBM in defining a new market, Compaq Computer Corp. last week became the first leading personal computer manufacturer to introduce a microcomputer based on Intel Corp.'s 80386 processor.

The introduction of the Deskpro 386 is a particularly bold move for Compaq, since IBM's intentions for using the 80386 are unknown.

The move contradicts Compaq's previously successful strategy of following IBM's lead with highly compatible products, which has placed the 4-year-old, Houston-based company among the Fortune 500.

"It is unreasonable to expect the industry to wait for IBM, especially if the wait is likely to be a year or more," said Rod Canion, president and chief executive officer of Compaq.

Although the Compaq Deskpro 386 pushes microcomputer hardware close to its current processing limits, software that runs under Microsoft

Corp.'s MS-DOS and takes full advantage of the power of either the Intel 80286 or 80386 microprocessors is not currently available.

But according to Compaq, the new MS-DOS will be worth the wait. "We expect the next version of DOS to benefit the Deskpro 386 by expanding its multitasking capabilities," Canion said. "And we are confident that not too long after, yet another version will take full advantage of the next generation of 80386 capabilities."

Despite the lack of new software, the 16-MHz speed of the Deskpro 386 positions the ma-

> 386-based cards may accelerate existing PCs.
> **Page 13.**

chine in a variety of markets, including programming, engineering, data base applications, artificial intelligence and power spreadsheets.

The choice of 40M-byte or 130M-byte hard disk drives, coupled with the fast processing speed, positions the machine as a network file server. The machine can be used as a multiuser system running Xenix and can effectively support four users.

The Deskpro 386 currently runs Microsoft's Xenix V/286 and will run Xenix V/386 when that becomes available in the first quarter of 1987. Both of these operating systems unlock much of the 80386 chip's ad-

TOP OF THE NEWS

Largest bank merger results in MIS staff cuts. **Page 2.**

Chip protection impact angers computer vendors. **Page 134.**

Telecom users want the FCC to oversee enhanced service plans. **Page 10.**

IRS filings buildup leads banks to electronic solution. **Page 14.**

Revamped 3Com server to debut. **Page 4.**

IBM unveiled Friday an early retirement plan aimed at cutting some 8,000 jobs in the U.S. next year. The voluntary plan allows employees to retire five years earlier than in the past. "We had anticipated it," said E. F. Hutton analyst Michael Geran. "It allows IBM to balance its worker load during depressed demand, offset productivity improvements and maintain its nonlayoff tradition."

E. F. Hutton & Co. appears to have narrowed down the choices of a vendor to supply it with 10,000 IBM PC-compatible workstations [CW, Aug. 11]. From a slate of potential suppliers which included AT&T, Data Gen-

Coming this week:

FOCUS

Communications and systems integration issues will be targeted in *Computerworld Focus*, due out Sept. 17. *Focus* will talk to users and experts while exploring connectivity and network management trends, analyzing telecom and data network options and offering bypass options.

Publishing systems ready, corporate purchasers elusive

By Eddy Goldberg

BOSTON — Lauded as miracle solutions that can boost productivity and reduce corporate America's hidden document production costs, corporate electronic publishing systems appear finally to be living up to their promise of the past few years.

"The products are basically mature and in adequate supply," according to David H. Goodstein, president of Interconsult, Inc., a Cambridge, Mass.-based consulting firm. Interconsult was the cosponsor of last week's Corporate Electronic Publishing Systems IV show.

However, Goodstein and others said at the Boston conference, corporate electronic

Cullinet future focuses on VAX

By Charles Babcock

BOSTON — Cullinet Software, Inc. officials said last week they have devised a strategy that will push them into the fast-growing VAX marketplace. The comments come on the heels of the company's first losing quarter ever.

In addition, Cullinet reaffirmed its commitment to providing support for IBM's SQL and to a computer-aided software engineering tool within a year and also announced performance improvements to its flagship product, IDMS/R.

The announcements added up to a suite of products that could return Cullinet to a growth path within a year if the company can meet its extended delivery schedule, according to industry analysts. The company

CW SPECIAL REPORT

Mini provides micro-mainframe solution

By James A. Martin

The process of delivering mainframe data into the hands of demanding end users has emerged as one of the most important MIS mandates — and headaches — of the mid-1980s.

The response developed by one New Jersey financial institution, the Morris County Savings Bank, is tabbed "creative systems integration" and aimed at limiting processing demands on the corporate mainframe while satisfying security concerns and end-user demands.
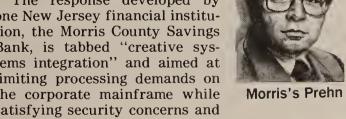
MIS executives at the Morristown-based bank utilized existing equipment

Morris's Prehn

and purchased relatively inexpensive components to develop a system that extracts data from its IBM mainframes and locates it on an IBM System/36 that functions as a file server for microcomputer users.

"We wanted to take advantage of the hardware and software available that we had," recalls Vincent N. Prehn, senior vice-president of the bank's Automated Information Management department. "I would rather train managers to creatively think about how to put things together than have them write code."

The transfer of files from the two IBM

NEWS

Wells Fargo-Crocker bank merger brings MIS layoffs

By Jeffry Beeler

LOS ANGELES — The largest merger in U.S. banking history has begun to rock the MIS organizations of the two banks involved.

Among the tremors of change following Wells Fargo Bank NA's acquisition of erstwhile rival Crocker National Bank are consolidation of the two banks' Southern California data centers and layoffs among Crocker's senior MIS management.

The layoffs, reportedly the result of duplication in the combined banks' operations, include the dismissal of Jerry Hotson, head of Crocker's Southern California operations, which includes its regional data center.

Hotson, who had worked at the bank for half of his 50 years, was dismissed simultaneously with at least three or four other Crocker systems executives, all of them vice-presidents based near Los Angeles.

Word of the high-level dismissals came first from a former Crocker MIS employee who retains close ties to the institution. The dismissals were later confirmed by an authorized bank spokesman.

Management ranks to thin

As with MIS operations in Southern California, the San Francisco area operations of the banks will be consolidated, and, it is expected, management ranks will be thinned.

"Once the data centers come together, we'll need fewer people to run our San Francisco systems than when the sites were operating separately," said Dan Geer, Crocker's manager of development systems programming. Geer declined to speculate about the extent of the layoffs, but, in what he characterized as a rough guess, he predicted they would occur in the second or third quarter of next year.

All the change now taking place inside Crocker and Wells Fargo stems from the federal government's decision early this year to approve the latter bank's request to absorb the former. The merger, which took effect June 2, has resulted thus far in 1,600 dismissals, with another 3,400 to follow by the end of 1987, according to Stephanie McAuliffe, manager of Wells Fargo's displacement support services (see story page 77).

To streamline operations and eliminate redundancy following its recent acquisition, Wells Fargo has ordered its own Southern California data center in El Monte to assimilate its Crocker counterpart in nearby El Segundo. The consolidation began in late July when Wells Fargo transported 30% of Crocker's IBM VM time-sharing environment from an IBM 3033 in El Segundo to an IBM 3081 in El Monte. By this past weekend, the migration of the remaining 70% of Crocker's VM work load was scheduled to be complete, Geer said.

Ultimately, Geer added, Wells Fargo plans to close the El Segundo facility entirely, although the exact shutdown date has yet to be decided.

Move or lose it

As part of the Southern California consolidation, Wells Fargo recently informed the El Segundo data center's 110 or so MIS employees that they have the option of either moving to El Monte, which lies 45 miles from their current workplace, or receiving a package of severance benefits and losing their jobs, a Wells Fargo insider said.

How many of the employees, who work mainly as operations and telecommunications specialists, will accept the relocation offer remains to be seen. "I think it's safe to assume that the acceptance rate will be less than 100%," Geer said.

Hotson, who learned of his layoff 25 years to the day after Crocker hired him, said the reductions were not a complete surprise. "With the merger of the El Segundo and El Monte centers, some reductions in staff were virtually certain," he said. "In these kinds of cases, two and two don't make four. They usually make three."

Since his last day with Crocker in early June, Hotson has explored a number of employment possibilities. "But nothing is finalized yet," he said. "I'm not going to rush into anything right away."

IBM plans Rome OSI center

By Elisabeth Horwitt

Reaffirming its support of the Open Systems Interconnect (OSI) communications standard, IBM last week revealed plans to establish a Telecommunications Development Center in Rome dedicated to developing OSI software for worldwide use with IBM systems.

IBM previously established two OSI development centers, one within its development laboratory at La Gaude, France, and the other in Palo Alto, Calif.

The Rome and Palo Alto centers will concentrate on developing OSI-compatible IBM software and interfaces with IBM systems for the upper four layers of the seven-layer International Standards Organization OSI model, which deal with transport, session, presentation and application functions.

The La Gaude center will continue to develop software supporting the lower three layers, which specify the physical, data link and network elements of the model.

Another OSI-related IBM project, the OSI Marketing Center at La Gaude, assists IBM's customers in integrating IBM and non-IBM OSI products in their networks and provides verification of OSI-conformance of network implementations.

IBM also is collaborating with several organizations from the UK in a three-year project to develop software for testing product conformance to OSI standards. One of those organizations involved is the National Computing Center.

ILLUSTRATIONS ON PAGES ONE AND 17 BY ALAN WITSCHONKE

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NEWS

File server boosts power, expands net links

3Com bridges major LANS, lowers price

By Peggy Watt

MOUNTAIN VIEW, Calif. — Offering lower cost and higher capacity, 3Com Corp. is scheduled to announce today an upgrade of its 3Server file server and software.

The 3Server3, based on an 8-MHz Intel Corp. 80186 microprocessor, can act as a file server for and function as a bridge between 3Com's Ethernet and token-ring networks and Apple Computer, Inc. Appletalk networks, the company said.

The server includes 1M byte of memory, a 70M-byte hard disk drive and one parallel and one serial port; it also incorporates Apple Computer's Appletalk on its motherboard to run with 3Com's Ethermac software. The 3Server3 is

> **"**
>
> *'Tying networks together is the key. 3Com is beefing up Ethernet, and having that gateway between the two is the thing to do.'*
>
> — Harvey Freeman
> Architecture Technologies Corp.

also available with a memory caching card of up to 2M bytes for faster performance, according to Wes Raffel, marketing director of 3Com's network systems division. A built-in automatic tape backup is optional.

The basic unit sells for $7,495, with the memory-caching Cachecard costing an additional $1,495 and the tape backup costing $1,995. The unit, scheduled to be available in October, is $2,500 less than its similarly configured predecessor, largely because the motherboard was redesigned to contain more components, Raffel said. The 3Server was originally released in January 1985.

The 3Plus software product line, enhanced to Release 1.1, now supports the IBM Token-Ring local-area network (LAN), as well as the 3Com token-ring system. It allows remote booting and includes a menu-driven installation and configuration procedure with defaults that can be modified at any point.

The newly released 3Plus Turboshare software module, priced at $295, allows the use of extended memory on servers subscribing to the Lotus/Intel/Microsoft Expanded Memory Specification. The $1,250 3Plus Netconnect function provides high-speed connection between Ethernet and token-ring networks, multiple token-ring or multiple Ethernet networks. Netconnect was announced last month with 3Com's token-ring system but will ship with the 3Plus products.

3Com also dropped the price of its Ethernet components, with Ethernet adapters reduced from $1,095 to $895; it reduced Ethernet boards from $650 to $595.

"The evolution of LANs is like personal computers," said Robert Buchanan, software product manager for 3Com's applications software division. "At a time, they were great to have by themselves. Then it became important to share peripherals. Now it's important to share LANs."

Individual work groups or departments may have their own networks, but they may later find it necessary to communicate with other work groups, he said. 3Com's global naming service lets a network expand beyond a single server and allows users on different work group LANs to share files and services.

The 3Server3 and 3Plus enhancements were greeted with enthusiasm by dealers, who said their customers are waiting for greater speed and capacity networks.

"Tying networks together is the key," said Harvey Freeman, vice-president of the consulting group Architecture Technologies Corp. "There aren't many token-ring nets out there yet, and who knows how successful they'll be. 3Com is beefing up Ethernet, and having that gateway between the two is the thing to do."

Current 3Com customers are eager for the enhanced memory and storage of the 3Server3, and new users will benefit from its easier installation, according to David Murphy, senior product manager at Business-

land, Inc.

"The new 3Server can do so many things that the old 3Server just didn't have room for," Murphy said. He called the expansion capability — up to 3M bytes with the memory caching plus greater disk space — the biggest single improvement. While the server's power will not be needed by the many small networks of four or five workstations, its expansion capability should be attractive to small work groups that may grow, Murphy added.

3Com addresses that smaller customer, however, with the 3Plus Share, a starter system with basic network file service. It includes 3Plus Menus and handles five nodes, is intended for use with an IBM Personal Computer AT-class machine as the server and sells for $895. An unlimited number of nodes can be added with the purchase of a second 3Plus Share system.

Upgrades will be available to existing customers for $2,000. Customers with existing 3Plus networks can convert software services on one server to the new 3Plus capabilities for $200.

TOP OF THE NEWS

eral and Wang Laboratories, Hutton has chosen either NCR or NEC, sources familiar with the bidding said. For its part, Hutton will only say that it has chosen a vendor and expects to make a public disclosure within the next week or two. Prospective suppliers that did not make the cut were unable to meet Hutton's price requirement of $2,000 a unit, including a color monitor, sources said.

■

Control Data will sell off more than 80% of its Commercial Credit subsidiary to a management group headed by former American Express Chairman Sanford I. Weill, which will then take the financial services unit public. Although CDC said it will use the proceeds to strengthen its core business, analysts said CDC was liquidating a major source of profits with its computer business still in the red.

■

Management Science America is reportedly developing its Information Expert fourth-generation language series to run on Honeywell, Burroughs and Sperry mainframes, a source close to the company said, with those three vendors helping out in funding. The plan is to have Information Expert, a development tool with AI components for IBM mainframes, available on minis and micros.

■

The U.S. Senate is expected to pass the Computer Fraud and Abuse Act of 1986 this week, according to congressional sources. The bill, which outlaws interstate tampering with private-sector computers, has already been passed by the House of Representatives. Likewise, the Electronic Communications Privacy Act, already passed by the House, is headed for Senate passage later this month.

Trailblazing Compaq entry draws mixed user reactions

By Douglas Barney

Despite the speed and potential address space of Compaq Computer Corp.'s Deskpro 386, many users contacted by *Computerworld* last week said they were unwilling to buy a machine targeted at a market that IBM has yet to define.

Users with calculation-intensive applications, however, welcomed the machine's increased speed.

"The idea that it is safe because IBM can't do anything with respect to the existing user base is naive," said Jeff Ehrlich, manager of product technology for General Electric Co. in Bridgeport, Conn.

Others are unwilling to bring in new types of machines. "At this point, we are more concerned with uniform distribution of equipment. The last thing on our minds is to switch away from the old IBM Personal Computer. We are still striving to integrate our PCs and get them up

to speed," said John Dawson, vice-president and manager of systems planning for the real estate industries group at Wells Fargo Bank NA in San Francisco.

'Risky and expensive'

"I can see particular applications where the machine might be useful, but I don't see any general purchases. Very few people need it. It is a risky thing, and it is very expensive," GE's Ehrlich said.

Some users who are interested in 80386 technology are otherwise hesitant to invest in the Compaq machine. "I think the 386 sounds very interesting because of the new operating system under development that gives you multiple virtual 8086 sessions. You could almost leap over the 286," said John Howard, project leader with Shearson Lehman Brothers, Inc.

"Compaq has a good name, but

this whole 386 field is kind of murky. It is going to need specific applications, perhaps involving multiple sessions," Howard added.

Other users were attracted to Compaq's faster performance. One beta user, Michael Minear, corporate coordinator of microcomputers for Sisters of Charity Health Systems of Houston, was impressed with the machine's speed. Operating Information Builders, Inc.'s PC Focus data base on an 8-MHz IBM Personal Computer AT configured with a third-party, 35-msec disk drive required 20 minutes to perform a data extract, he said.

"On the 386, it took only 56% of the time. It saved hours for our people every day," he said. For Minear, the faster hard disk access and memory access were of prime importance.

"If I needed the horsepower, I would go ahead and buy the Compaq," said Richard J. Stuckey, partner in Arthur Andersen & Co.'s world

headquarters in charge of technical support for minis and microcomputers. "It is going to be more suitable as a network server than as an individual PC."

Analysts were generally positive. "Once the word gets around that it is compatible, a lot of the initial resistance will be overcome," said Michael Goulde, market analyst with Yankee Group in Boston. Goulde sees a large potential for the machine as a network file server and for multiuser applications using the Microsoft Corp. Xenix operating system.

The Compaq currently runs Xenix V/286 and will run Xenix V/386 when it is available in the first quarter of 1987.

"I think they could sell 15,000 this year and 60,000 to 70,000 next year," Goulde said. Market research firm Dataquest, Inc. predicts Compaq will sell between 35,000 and 45,000 units in 1986.

Engineer's long hours pay off

By Douglas Barney

HOUSTON — Compaq Computer Corp.'s Deskpro 386 is largely the result of the efforts of Gary Stimac, who is the fifth employee Compaq ever hired and current vice-president of engineering.

Stimac's work on the Deskpro 386 began about 18 months ago, when Intel Corp. introduced the 80386 microprocessor to Compaq on a block- diagram level.

"They listed all the features and gave us a rough schedule of what the product was going to be. Then about a year and three months ago, we received detailed specifications on the product, and at that point in time we started doing our own block diagrams of how we would fit that into a whole series of different products," Stimac said in an interview with *Computerworld* last week.

In addition to Compaq's work with Intel, the firm formed a relationship with Microsoft Corp. to flesh out the complex issue of software compatibility and determine what kind of system the firm should build. "We started discussing with Microsoft the different architectures we could build products on. We went from the gamut of building, on just a paper block-diagram level, a minicomputer to an extremely simple PC," Stimac recalled.

These relationships clearly gave Compaq a few advantages over many of its competitors. In fact, a three-way nondisclosure agreement was worked out allowing Compaq, Microsoft and Intel to share proprietary information.

As the project evolved, so did the work hours. "In the beginning, we basically worked with eight-hour days. It is very important to be very refreshed when you are working on this kind of product. When it comes down to making some very key decisions and really getting the team rolling, then we put in 11- or 12-hour days and worked during the weekends," Stimac said.

The product design also evolved. "We were marching down to a 12-MHz design with a 6-MHz bus. We

converted that and actually had boards up and running to a 16-MHz and 8-MHz bus design," Stimac said.

Memory architecture was also a key concern. "We worked on three or four different types of memory architectures. We did a cache design, a paged architecture, a pure dynamic random-access memory design and static column memory. The clear performance/cost trade-off winner was in the static column memory approach," Stimac said.

Stimac and his crew, which grew to 250 people, had to confront other critical issues, such as disk drive technology. "We measured different types of technology and looked at what type of drive would give us the best performance. We built ourselves some small computer systems interface (SCSI) drives and were doing benchmarks with that type of architecture because we thought SCSI was the way of the future," he said.

But SCSI was not the answer. "We found that there was a performance loss by using SCSI, so we went to the enhanced small disk interface drive approach, which allowed us to move the data separater function from the controller onto the drive itself. We then kicked off an effort with respect to taking the entire controller and data separater and putting it on a half-height, 40M-byte drive. We did our performance studies and said, 'That is where we want to go in the future,' " Stimac said.

But Compaq's and Stimac's work is never done. Versions of the 80386 running at 20 MHz or 24 MHz are the focus of future Compaq machines. "Even though those chips are not available today, I am very much aware of when they will be available, and we are already looking at how to push other parts of the system to match that performance. We are already working on the next thing," Stimac said.

As for an 80386-based portable, Stimac declined to comment specifically. "It sounds like a good idea. You would expect that from a leading portable manufacturer, but we don't talk about new products."

Compaq Deskpro 386, Models 40 and 130

Microprocessor: Intel Corp. 80386	
Random-Access Memory: 1M byte, expandable to 14M bytes	
Floppy Disk: one half-height, 1.2M-byte, 5¼-in. floppy disk drive	
Hard Disk: choice of 40M bytes (28-msec access) or 130M bytes (19-msec access)	
Slots: Model 40 — Three slots for 8-bit/16-bit boards, three for 8-bit boards; Model 130 — Two slots for 8-bit/16-bit boards, three for 8-bit boards	
Speed: 16 MHz	
Operating System: Microsoft Corp. MS-DOS 3.1, Xenix System V/286 and Xenix System V/386 (available first-quarter 1987)	
Power Supply: 192W	
Suggested Retail Prices: Model 40 — $6,499; Model 130 — $8,799	

CW Chart

Compaq unveils 80386 micro

dress space.

The Compaq machine comes with Microsoft's MS-DOS 3.1 and operates at 16 MHz, which allows existing applications to run two to three times faster than IBM Personal Computer ATs and compatibles running at 8 MHz. Hard disk drive access is also improved and ranges from 19 msec to 28 msec.

Some users, however, say they believe the 80386-based machine is technological overkill. "We still haven't pushed the Personal Computer XT to its limits," said Donna Bohata, PC Coordinator for Ebsco Industries, Inc. of Birmingham, Ala.

But for those firms with large number-crunching needs, the Deskpro 386 comes as a relief. "We plan to use it for our engineering calculations," said David L. Lee, manager of the Information Center for The M. W. Kellogg Co., a Houston-based designer and builder of petrochemical plants. M. W. Kellogg is a beta site for the Deskpro 386.

According to Lee, one hydraulic engineering problem took more than 10 minutes to solve on an 8088-based Compaq Deskpro and seven minutes with an 80286-based Compaq Portable. With the Deskpro 386, the problem was solved in 54 seconds.

Development tool

Lee said that the firm plans to use the Deskpro 386 as a development tool for its Digital Equipment Corp. VAXs and its mainframe. "In other cases, we can run the application on the 386 rather than on the larger systems," he said. "I had an order out for 286's that I switched to 386's."

Nor is Lee worried that an IBM 80386 machine will conflict with an investment in Compaq machines. "If I end up with a machine that is obsolete because IBM goes off in a different direction, I still have a machine that runs my software faster."

IBM set a standard more than five years ago, when it introduced the original 8088-based IBM Personal Computer, and again set a standard in 1984, when it introduced the 80286-based IBM PC AT.

But Compaq was unwilling to wait for IBM to introduce an 80386-based machine, an event expected sometime next year.

NEWS

IBM powers up DBMS application development tools

Enhancements, rollout assist DB2, SQL/DS

By Charles Babcock

RYE BROOK, N.Y. — IBM has enhanced five application development tools and introduced a sixth to aid application development for its relational data base management systems DB2 and SQL/DS as well as for the IMS DBMS.

In customer letters released last week, IBM said Version 3 of Cross System Product (CSP), IBM's fourth-generation-language offering, has been enhanced to support application development for DB2 under the MVS/XA operating system and for SQL/DS under the VM operating system.

CSP can also be used to develop applications in MVS, VM or VSE. An application written on one operating system in CSP can be run on either of the other two, IBM spokesmen said.

Version 3 consists of two components, CSP/Application Development and CSP/Application Execution. The development and test environment for CSP/Application Development can be VM/SP Conversational Monitor System (CMS); CICS for MVS and VSE; and MVS/TSO. In addition, a CSP program written on 370 family mainframes will run on an IBM Personal Computer, IBM spokesmen said.

"They lifted CSP up quite a bit. There's good relational support in it now," said Michael Braude, vice-president of the Gartner Group, Inc.'s Software Research Center in Stamford, Conn.

CSP/Application Development is available for a one-time charge of $17,300 or a monthly license charge of $750; CSP/Application Execution is available at $12,700 or a monthly license charge of $550.

IBM also announced a tool, SDF II 1.1, which allows a user to design and prototype applications in TSO or CMS under the ISPF dialog manager. Once the prototype has been created, the user can continue development in different environments, including CICS, IMS/DC, CSP/Application Development and ISPF. It will be available in February for between $350 and $600 a month.
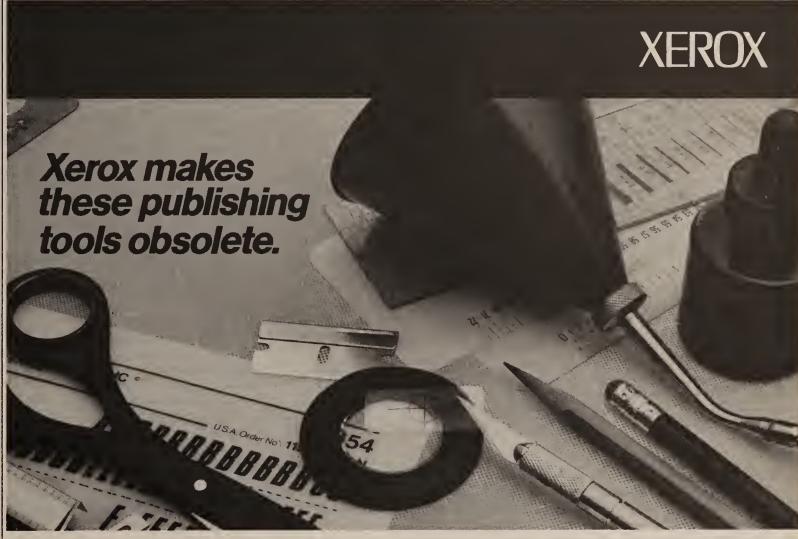
Version 2.2 of IBM's IMS ADF supports the CICS/OS/VS processing environment working with the IMS/VS data base management system, DB2 relational system and the VSAM file management system, IBM said. It is available at a base price of $33,000.

IBM also announced Release 2 of VS Cobol II, which now supports the 31-bit addressing of MVS/XA. Features have been added to ease migration to MVS/XA from OS/VS Cobol. A full-screen interface has been added for interactive debugging in the MVS, MVS/XA and VM/CMS environments. Release 2 will be available Dec. 19 at a monthly license charge of $1,070, spokesmen said.

Release 2.1 of QMF has added controls to manage end-user participation in the system. Release 2.1 will be available in November at a monthly license charge of between $1,250 and $1,500.

Also enhanced was SDF/CICS/OS/VS 1.5, upgraded to the current level of CICS 1.7, with added hardware support for the 5550 Multifunction Workstation. It will be available in October for $349 a month or a one-time charge of $7,065.

Guidelines for data flow out

By Mitch Betts

The Data Processing Management Association (DPMA) last week adopted guidelines for international data transfer to help U.S. businesses abide by foreign privacy and copyright laws.

"This is preventive action for the information age," said David R. Smith, president of DPMA International, based in Park Ridge, Ill. "Businesses would ideally appreciate the complete free flow of information across national borders. However, to do so would violate some countries' laws and might endanger individuals' rights to privacy," he said.

Highlights of the DMPA guidelines on transborder data flow include the following:

- Both the transmitting and receiving parties must obey the privacy and data transfer laws of each nation through which the data passes.
- When sending personal information about individuals, only pertinent information should be included. The data should be accurate and up-to-date. Individuals' identities should be excluded unless necessary.
- If it is necessary to send individuals' names and addresses, the two fields of data should be sent separately. Encryption or other security coding is also recommended.
- Personal data should not be disclosed or used for purposes other than that for which it was collected.
- Neither data that has been obtained by means that violate the laws of the sending or receiving country nor proprietary or copyrighted data should be transmitted.

NEWS

Group claims divested Bells have gouged users since 1984

Users endorse allegation of $3 billion overcharge

By Mitch Betts

WASHINGTON, D.C. — The International Communications Association (ICA), a major group of business telecommunications users, last week endorsed a consumer group's controversial study charging that divested Bell operating companies have overcharged users by more than $3 billion since the 1984 breakup of the Bell system.

"Ratepayers, both large and small, are being charged excessive rates," ICA attorney Brian R. Moir said. He charged that the local Bell telephone firms have been granted excessive profits by state and federal regulators.

The ICA endorsed a report by the Consumer Federation of America, a Washington-based consumer advocacy coalition, on the financial performance of the regional Bell holding companies since divestiture. Mark N. Cooper, an economist who wrote the study, said the overcharges amounted to a 5% increase in the cost of telephone service for both business and residential users.

The regional Bell holding companies sharply criticized the consumer federation's study as technically flawed, exaggerated and alarmist.

"Basically, their point is that high rates of return have resulted in overcharges to consumers, and we dispute that entirely," said Richard C. Adler, a spokesman for Nynex Corp., which is the holding company for New England Telephone and New York Telephone companies. Adler said Nynex's profit is attributable to the growth in network usage and other factors overlooked by the consumer group's study.

The study concluded that the rate of profit for telephone companies is one-third higher than that of the average large corporation. In the first half of this year, local telephone companies earned a return on equity of 14.1%, while the 900 largest corporations earned 10.6% and other utilities earned 10.8%, the study said.

"Local phone companies received preferential treatment after the AT&T breakup because of concerns about the economic health of the companies in the postdivestiture era. These concerns were unfounded," Cooper charged.

Moir dismissed arguments that the telephone companies need special regulatory treatment because they face an increasing amount of competition. "ICA members, which include major corporations, are particularly aware of the fact that the Bell operating companies face no international competition and little or no competition domestically," Moir said.

Georgia court upholds legality of AT&T Information Systems leases

By Ninamary Buba Maginnis

SAVANNAH, Ga. — In one of the first validity tests to be adjudicated, the Superior Court here recently upheld AT&T Information Systems leasing contracts.

The court granted AT&T a partial summary judgment in its suit to collect $8,900 in termination charges from Holiday Inn/CSI Associates.

The hotel chain's counsel is considering options, including appeal, in the wake of the court ruling earlier this month.

When the federal government required telephone company divestiture, a court order transferred ownership of all leased equipment to Morristown, N.J.-based AT&T Information Systems, an AT&T spokesman said. The transfer also included all equipment lease agreements signed with local telephone utilities.

The fixed-term equipment contracts contain a termination clause that specifies customers must pay a specific sum if they break the contract to lease equipment with another vendor or to upgrade AT&T equipment, the spokesman said.

But Holiday Inn attorney Bruce N. Saypol of Wood, Lucksinger & Epstein in Washington, D.C., disagreed. "The customer signed up for tariff service and is forced to accept nontariff service, nonregulated service. I think it's unfair — highly unfair," Saypol said.

"The client never signed up with

AT&T. The client signed up with the local phone company — and only the local phone company," he added.

Because the local telephone company was no longer able to provide service, customers should have been free to choose another equipment vendor, Saypol said.

The Georgia Superior Court ruled that Holiday Inn/CSI Associates was liable under the termination charge provision when it chose to break its contract and sign on with another vendor, said David J. Ritchie, general attorney for AT&T. The court will determine damages soon, although a date has not been set, according to an AT&T spokesman.

"Most contracts are reassignable," AT&T's Ritchie said. "If you had a contract with another person to deliver a bale of hay and you decided to go out of the hay business, you could assign the contract to someone else. In America, people are recognized to be free to do different things. We just had the court in Georgia agree with us."

Current fixed-term lease customers who want to upgrade equipment are required to pay termination charges but receive an upgrade credit if they choose to continue service with AT&T, Ritchie said. The credit is calculated on a percentage of what the new contract is worth, he said.

The Holiday Inn/CSI Associates' controller could not be reached for comment.

Publishing units out, buyers elusive

publishing is still a young industry, and many questions common to emerging technologies still remain to be solved: Who within an organization is responsible for buying and managing the systems? Can suppliers provide adequate service? And how can publishing systems be tied to existing data processing and MIS functions?

Nevertheless, as was evident at the CEPS conference, viable corporate electronic publishing products now exist, from inexpensive desktop publishing packages up through networked workstation-based systems and large, dedicated systems costing millions of dollars. Goodstein estimated that corporations spend between 10% and 20% of annual revenues on publishing. However, the function is dispersed among multiple cost centers and is not apparent to most organizations.

Newcomers to the industry said they were impressed by the systems displayed at the show last week. The publishing systems enabled attendees to quickly merge text and graphics from different electronic sources and then format and compose that input on a page, without having to learn complicated typesetting commands.

More experienced users with high-volume publishing shops were not as impressed. One such attendee was the word processing manager in a large New York investment banking firm that has a publishing operation running around the clock seven days a week. She estimated the department's output at about 500,000 pages per month and said current supplier offerings still fail to meet her publishing needs. However, she did notice progress in supplier offerings.

"I'm asking the same questions as I was a year ago," she said. "Last year, none of the vendors understood what I needed, and none could show me any products that I wanted. This year, I've seen a lot more than I thought was available, mostly in the areas of text and the true integration of graphics and tabular material."
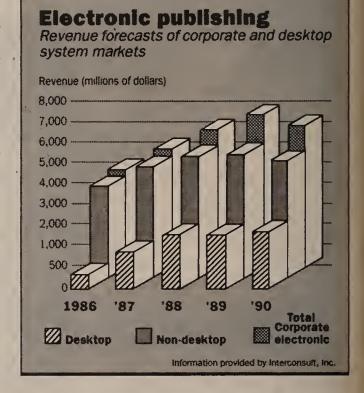
Despite an increase in product features and diversity, sales have not been growing as fast as observers expected, though five-year prospects indicate strong, steady growth (see chart). One explanation offered by Goodstein is that corporations do not have a clearly defined strategy for implementing electronic publishing.

"The investment community and the start-ups have been working hard, but we're not seeing an instant surge in business. For organizations to spend $300,000 and up on a system, they must face the unresolved question of corporate electronic publishing systems management," he said.

A recent Interconsult survey of 247 Fortune 1,000 companies asked who would buy, own and operate publishing systems within an organi-

zation. Twenty-eight percent listed MIS/DP and office automation staffs, 18% listed administration, 17% cited marketing, 14% chose engineering, 11% said an in-plant printer and a full 20% listed "other."

Desktop publishing on personal computers generated the most enthusiasm and new products at the show.

However, the IBM PC vs. Apple Computer, Inc. Macintosh argument continues to be a problem in many organizations considering microcomputer-based systems. "We have fervent users of both systems," said Glenn Johnston of MIT's Graphic Arts Service, the university's printing service. He said the Macintosh offers significant cost advantages, and he liked a sophisticated Macintosh-based publishing system he saw at

Electronic publishing
Revenue forecasts of corporate and desktop system markets

Revenue (millions of dollars)

1986 '87 '88 '89 '90

Desktop   Non-desktop   Total Corporate electronic

Information provided by Interconsult, Inc.

another university. Service is a big issue for Johnston, who called IBM and Xerox Corp. service very expensive.

The success of Interleaf, Inc.'s publishing software running on general-purpose workstations apparently has inspired other vendors to follow suit. Texet Corp., for example, which had sold only dedicated systems, announced the availability of its high-end publishing software on the Sun-3 workstation from Sun Microsystems, Inc.

NBI, Inc., which is working to parlay its installed base of word processing and OA systems into market share for corporate electronic publishing systems, showed an experimental port of its Integrated Workstation publishing software on a 32-bit Unix workstation from its subsidiary, Integrated Solutions, Inc. NBI also demonstrated a prototype of Pro Publisher, a vertical, 11- by 17-in. workstation that enables the user to view a full-size what-you-see-is-what-you-get page display. Pro Publisher is slated for release in first-quarter 1987.

Mainframe publishing was discussed by Charles Cooper, Page Printer product manager for IBM, who described its potential benefits as access to corporate data bases, existing applications and large, shared resources; the ability to distribute the publishing process across corporate networks; and an assured growth path.

Cooper said current constraints include poor or complex user interfaces, the separation of the applications from the data and performance issues.

NEWS

Users ask FCC to toughen basic services rules

Say divested Bells merit oversight

By Elisabeth Horwitt

While the Federal Communications Commission has given the official go-ahead for divested Bell operating companies to begin filing for enhanced service tariffs, users and network vendors are still battling to ensure that their own networking options are not squeezed by the new offerings.

Recent FCC filings from U.S. Sprint Communications Co., MCI Communications Corp. and national user organization Tele-Communications Association (TCA) all object to the FCC's current regulations — and lack of them — regarding how the telephone companies will offer basic services to private users and competitors.

"If the divested Bell operating companies are permitted to determine the cost and quality of access to basic services, they can make their enhanced services a better deal for customers than either going with a competitor or setting up their own facilities," said Michael Senkowski, an attorney with Wiley, Rein & Fielding, TCA's general counsel.

TCA also objected to Southwestern Bell Corp.'s attempt, in an Aug. 4 FCC filing, to limit which basic services come under Comparably Efficient Interconnection (CEI) and Open Network Architecture (ONA). Both were enacted to ensure that AT&T and the divested Bell operating companies do not use their control of access facilities to choke competition in the enhanced services market.

They require that the companies submit plans on how they will supply other enhanced service providers with the same level of basic transport services that they provide to themselves. The CEI plans are meant as interim measures until the longer term ONA plan takes effect sometime after 1988.

Customers' right to services

Southwestern Bell's FCC filing was an objection to the FCC's recent decision that private customers — not just the company's competitors in the enhanced service market — have the right to basic services under the CEI and ONA legislation. The company suggested that the current FCC ruling would require the companies to "unbundle basic service elements and make them equally available for use by other parties in providing any kind of service, including intrastate, basic services."

Southwestern Bell wants to ensure that private customers do not "string together several basic services and resell them as an offering that competes with our regulated basic services tariff," claimed Wayne Masters, Southwestern Bell's district staff manager for federal regulatory matters.

TCA disputed that Southwestern Bell had the right to "deny access to CEI and ONA to customers that wish to use network building blocks for reasons other than supporting enhanced services" or to decide whether a proposed use was legitimate.

"If the FCC upholds the CEI ruling, the carriers will simply set up an organization that delivers certain services to other network vendors but not to end users," charged Joaquin Gonzalez, service director of enterprise networking at Stamford, Conn., research firm, Gartner Group, Inc. "That means that the only users who will get those offerings are big corporations with hungry lawyers who can show the carriers they mean business," Gonzalez said.

"There is plenty of precedent for this: About 20 huge corporations are currently saving hundreds of thousands of dollars by using LATA [Local Access and Transport Area]-wide switched access, while everyone else pays tolls for dialing out of local areas," he added.

TCA, U.S. Sprint and MCI all filed petitions for the FCC to reconsider its decision not to require that the divested Bell operating companies and enhanced service vendors split the difference between providing a service at a telephone company's central office and having to transport customers' transmissions from the local telephone company's central office to a competitor's facility.

"The current Computer Inquiry III regulation says that if you can't convince the Bell operating company to co-locate your equipment on their premise, you have to buy a line to connect their facility to yours at regular tariff rates," said Michael Hirsch, director of business development for network services at U.S. Sprint subsidiary Telenet Communications Corp. "We're saying, 'Wait — you're giving the Bell operating companies an unfair cost advantage.'"

TCA warned that requiring the divested Bell operating companies to pass on to competitors all savings they realize on access costs could discourage them from investigating new, cost-saving technologies.

The user organization also filed objections to AT&T's latest request for exemption from CEI and ONA regulations on the grounds that, unlike the divested Bell operating companies, it can no longer control competitors' access to transmission facilities. "That's just not true. When it comes to interstate private lines, AT&T still has a virtual monopoly," TCA attorney Senkowski said.

AT&T bottleneck

"We've always argued that AT&T has control of a bottleneck," agreed Telenet's Hirsch. "Whenever we have to put together an inter-LATA network, we have to go through them. At some point, we'll be able to use Sprint's lines instead, but we're not sure when."

AT&T was unavailable for comment.

Once free from equal access restrictions, "AT&T could charge itself nothing for transport services and fund the service with what it charges users and competitors," Gonzalez said.

"The ONA ruling would make us vulnerable because it would force us to provide our competitors with basic services that differentiate our services from theirs," said Ted Fletcher, AT&T district manager for federal regulations. "We've already lost significant share in the long-distance market. How much do we have to lose before people stop saying we're too big?"

In its own FCC filing, user organization International Communications Association (ICA) requested a "subsidiary proceeding just to deal with CEI," according to ICA's Washington, D.C., counsel Brian Moir. "Right now, the FCC is letting each carrier work out its own plan without ensuring that the plans will work together later. We want to get all draft plans and tariffs on the table now, instead of having all this nitpicking."

NEWS

Honeywell ups DPS 88 mainframe line, adds power

Analyst claims debut is merely repricing

By James Connolly

PHOENIX — Doubling memory capacities and making standard several previously optional features, Honeywell, Inc. last week introduced six replacement models for its DPS 88 line of mainframes.

These models, collectively known as the DPS 88/860 and DPS 88/890 families, provide 100% performance gains over the DPS 88 systems introduced four years ago, according to Honeywell officials. The company attributed those gains to the use of 256K-bit chip memory, which allows twice the memory capacity of the earlier systems, and a disk I/O man-

agement technique. The older DPS 88 line was discontinued but can be upgraded to the newer models.

However, one analyst claimed the latest DPS 88s are basically the original machines with a few enhancements and major price cuts. Analyst Michael Geran of E. F. Hutton & Co. said Honeywell had to cut prices to remain competitive in an era when new mainframes provide up to 20% gains in price/performance.

Honeywell officials claimed that the newer DPS 88 models, which range in price from $1.7 million for the uniprocessor DPS 88/861 to $4.5 million for the dual-redundant DPS 88/892T, provide twice the performance of comparable earlier models in a mixed work-load interactive and batch environment.

Using the 256K-bit memory chips,

the memory capacities for the DPS 88s now range from 32M bytes to 128M bytes. The newer models also use Honeywell's GCOS 8 Performance Enhancement Facility. The facility includes the Rapid Access Data System (RADS), which was designed to provide fast access to stored data held on disk files.

A Honeywell official said RADS takes advantage of the systems' increased memory and draws adjacent blocks of data into the CPU in addition to a requested piece of data. This is in anticipation that the next request will use that adjacent block, thus improving disk access hit ratios. The company said RADS will reduce access time by 60% or more in batch environments, less in interactive applications.

Robert C. Hesser, marketing vice-

president of Honeywell's Large Computer Products Division, pitted the DPS 88 line against IBM's 3090 mainframes.

"Honeywell large systems enjoy a 2-1 advantage in interactive, on-line processing over IBM systems with comparable batch processing performance," Hesser said.

However, the DPS 88s, made in Phoenix, also overlap the performance range of Honeywell's high-end mainframe family, which is the DPS 90 family made by NEC Corp.

Geran speculated that that overlap could hurt the Phoenix operation. "As you phase-in at the high end with Japanese systems, some time in the future the crossover favors the Japanese system, unless you can cut the cost of the Phoenix systems," Geran said.

Cullinet future focuses on VAX

is likely to suffer one or two more losing quarters in the interim, observers said.

Cullinet Vice-Chairman David L. Chapman told a gathering of press and industry analysts in Boston that the traditional mainframe software

house has a strong advantage in addressing the Digital Equipment Corp. VAX market, since more than half of its customers have installed VAXs on the manufacturing floor or in departments.

Cullinet is committed to producing a relational data base management system (DBMS) for the VAX within a year and will do so using an OEM relational system acquired in the purchase of Esvel Co., a San Jose, Calif., software firm. Known as Stellar, the system is already in use as the rela-

tional product on Hewlett-Packard Co.'s Spectrum minicomputer, according to Brian S. Walsh of the Yankee Group in Boston.

In addition, Cullinet officials said they plan to move the company's application product line over to the VAX, but they did not provide a time frame in which that task would be completed.

In announcing its VAX strategy, Cullinet also said it would produce a computer-aided software engineering tool that would be integrated with Cullinet's Application Development System (ADS), a development language popular with 2,500 users of Cullinet's IDMS/R data base management system. The personal computer-based system will be ready within a year, officials said.

Cullinet also announced that Release 10.2 of IDMS/R now includes support for IBM's SQL when queried by Cullinet's Online Query System. The DBMS also incorporates performance improvements that permit it to process 94 transactions per second on an IBM 3090 Model 200 mainframe processing an ADS application. The company said the release will be in beta test in October but provided no target date for general availability.

Outside analysts applauded Cullinet's announced strategy but said the company would have to deliver the products within the stated one-year time frame to avoid losing credibility. The president of a small software company that has supplied accounting software to the VAX marketplace since 1979, Kenneth Ross of Ross Systems, Inc. in Palo Alto, Calif., said Cullinet's commitment to the VAX line will help DEC sell more hardware. "It's incredible because all the people formerly just on IBM will take this as a signal to migrate to the VAX," he said, citing Cullinet's high visibility on Wall Street.

Other analysts cautioned that Cullinet still has a hole in its strategy to link VAXs to the mainframe. Unlike some of its competitors, the company is planning a relational DBMS for the VAX that will have no applications bridge to IDMS/R, Cullinet's IBM

mainframe DBMS.

"They're playing catch-up. They have to, given where they are," said Dennis Yablonsky, president of Cincom Systems, Inc. Cincinnati-based Cincom has offered relational DBMS for both mainframes and the VAX since 1984, with a fourth-generation language, Mantis, bridging the two.

Likewise, Software AG of North America, Inc.'s Vice-President of Marketing Thomas D. Blondi cited the portability of applications developed in Software AG's Natural; they are able to run on its Adabas relational DBMS whether it is resident on an IBM mainframe or the VAX.

"We believe it will take three to five years before this strategy will have an impact for Cullinet because of the need for integration," Blondi said.

Michael Braude, vice-president of the software research center with the Gartner Group, Inc. research firm, said Cullinet's commitment to providing support for IBM's SQL will give application developers the tool they need to develop applications for both DBMS. Eventually Cullinet will offer its ADS language on the VAX as well as on the mainframe, providing a direct applications bridge, he said.

But Cullinet officials were not willing to commit themselves to a date when such a move would be made.

"They've got a history of doing this," charged Frank Dodge, chairman of McCormack & Dodge Corp., the Dun & Bradstreet Corp. subsidiary in Natick, Mass. Dodge said the Cullinet strategy characteristically was to preannounce products. He expressed doubt that Cullinet would be able to live up to its one-year time frame. Even if it does, he noted, M&D's general ledger tool has been available on the VAX for three years.

Even the competition, however, shuddered at the prospect that Cullinet might stumble in executing its strategy. "Cullinet has been a bellwether software company. It has a lot of visibility. If they begin to have problems, it will affect the whole industry," Software AG's Blondi said.

Cullinet's Chapman

NEWS

Vendors plan 80386-based boards despite weak 80286 mart

Intel eyes accelerator card for faster chip

By David Bright

Several optimistic vendors are preparing to introduce personal computer accelerator boards using the powerful Intel Corp. 80386 microprocessor, even though the market for earlier cards based on the 80286 chip has failed to materialize.

Applied Reasoning Corp. and Phoenix Computer Products Corp. are expected to use the 80386 in accelerator boards, and Intel has also been rumored to be developing such a device. The boards are generally expected to fit into the IBM Personal Computer AT, but some could speed up the IBM Personal Computer as well.

Richard Bader, co-general manager of Intel's Personal Computer Enhancement Operation, is positive about the overall chances of 80386-based accelerator boards. However, he will not comment on Intel's rumored board development activities.

According to Bader, while boards based on the 16-bit 80286 chip did not catch on as planned, the additional capabilities of boards built around the much more powerful 80386 chip should make accelerator cards much more attractive this time around.

'Outstanding capability'

"All that [80286-based accelerator cards] really provide is additional performance," he says. "It's my expectation that a well-designed 80386 add-in card will provide outstanding capability, significant performance improvement, the ability to do concurrent multitasking of existing applications and the potential to run future 32-bit 80386 software when that's available."

Bader adds, "There's a tremendous amount more value that you can get with an 80386 add-in card than you could get with the accelerator cards that are already on the market."

Compatibility was a major problem for 80286-based cards — especially the early ones — but Bader says the 80386 has some built-in capabilities to help ensure that the compatibility of cards based on this chip will be superior.

Possible shortage snag

But even with the compatibility issue out of the way, vendors of the cards could encounter another snag: If a shortage of 80386 chips should occur, the smaller companies could have trouble obtaining them, according to Dataquest, Inc. analyst Peter Teige.

Bader predicts that the new wave of add-in cards will carry price tags starting at less than $2,000, making upgrades to the higher performance class much less expensive than the cost of a complete new system. For example, prices for Compaq Computer Corp.'s 80386-based Deskpro 386 start at $6,499.

Other observers predict that the accelerator boards will be more expensive than Bader says. Dan Lickley, president of Applied Reasoning, a Cambridge, Mass.-based accelerator board vendor, expects prices of the boards to generally fall between $2,000 and $3,000.

Chip prices in doubt

But with the future price of Japanese random-access memory (RAM) chips in doubt, Lickley says, board prices could be driven up. However, Applied Reasoning's 80286-based accelerator board, originally $2,000, has dropped to less than $1,000.

Applied Reasoning is expected to introduce its 80386-based accelerator board at Fall/Comdex '86 in November and to begin shipments in early 1987, Lickley says. Carrying at least 2M bytes of RAM, the board will be designed to fit into both the IBM PC and PC AT.

"One thing I can tell you, the first ones aren't going to be cheap," says Cynthia Ringo, manager of Quadram Corp.'s board products division.

Due to slow sales of its Quadsprint accelerator boards, Quadram will not immediately enter the market for 80386-based cards, Ringo says. What is really needed, she adds, is software to release the capabilities of the 80386 chip.

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NEWS

Increased bank reports prompt IRS to test computer filing

Mag tape to be used for currency recording

By Stanley Gibson

In an assault on the mountain of paperwork that has resulted from stepped-up filing of currency transaction reports, several banks and the U.S. Internal Revenue Service are launching a test program in which the banks will file these reports on computer tape instead of paper forms.

If the program is successful, it will be implemented on a wide scale, an IRS spokesman said.

Increased federal prosecution of banks failing to file currency transaction reports gained wide publicity last year when the Bank of Boston and a number of other large institutions were fined for failing to file.

The Bank Secrecy Act dictates that banks must report all transactions of more than $10,000 to the IRS. Law enforcement agencies use the forms as a means to track down cash obtained by lawbreakers such as drug dealers, who launder illegally obtained funds by depositing them in banks.

Reporting rate increases

Prior to the prosecution of Bank of Boston in early 1985, the monthly rate of currency transaction reports was less than 70,000, but by Decem-

ber 1985, the rate had increased to more than 250,000 monthly, according to the IRS spokesman. In 1985, the IRS received a total of 700,000 reports; this year, the agency expects more than three million. The increase in paperwork prompted the IRS to look at faster ways of processing the forms, such as receiving the information on magnetic tape.

Pending legislation that calls for reports to be filed on all transactions of more than $3,000 is likely to be passed by the U.S. Congress this fall. The law would dramatically increase the need to file the reports on magnetic tape.

"This area of mag tape reporting is brand new, and legislative changes, if they go through, will put more emphasis on it," said Thomas Keane, vice-president and manager of deposit control services for Connecticut National Bank in Hartford, Conn., which will take part in the test program.

"The IRS would have loved to have it last year. They can't deal with the flood of forms," said Michael Nolan, an attorney with Pitney, Hardin, Kipp and Szuch in Morristown, N.J., who has represented a number of U.S. banks in connection with investigations of money laundering. "The IRS is committed to that direction. Only the technology and logistics have to be ironed out," the attorney added.

Midlantic Bank, Connecticut Na-

tional Bank, Wells Fargo Bank, Bank of America, Seafirst Bank, Michigan National Bank and Florida Commercial Bank formed a committee under the sponsorship of the Chicago-based Bank Administration Institute (BAI) with the goal of determining the format of forms filed on tape. The pilot program will try out the format guidelines established by the group in discussions with the IRS.

Although not part of the committee, Norwest Bank in Minneapolis and Shawmut Bank of Boston said they plan to take part in the pilot program.

The Bank of Boston declined to comment on whether it will participate in the pilot program, although it developed its own internal currency transaction report computer program last year, as did Shawmut and other banks.

Computerized compliance system

Midlantic National Bank, headquartered in Edison, N.J., has been working closely with Atchley Systems, Inc. of Arlington, Texas, to develop a program that will computerize compliance with currency transaction laws and produce a tape or paper form that can be filed with the IRS.

Called Comply/CTR, the program is written in Cobol for IBM 4300 mainframes and uses CICS and VSAM, according to Jim Atchley, president of Atchley Systems. The program has been sold to several banks participating in the IRS test for a license fee of $20,000. Atchley Systems was founded in March, and Comply/CTR is its first product.

The program correlates data in customer information files with currency transaction data. The program can add up transactions totaling

more than $10,000 made by a single customer in one day at different branches. If the transactions total more than $10,000, a report must be filed, even though no single transaction exceeded that limit.

Disc, Inc. of Baltimore also developed a program that tracks currency transaction report compliance and is called the Large Cash Reporting System.

That system is currently in use by a large Florida National Bank that participated in its development. Rhona Baverman, Disc's marketing support manager, said the $17,500 program for IBM 4300 mainframes is being adapted to produce cash transaction reports in tape form. "We think as soon as the threshold is lowered to $3,000, mag tape will be required," Baverman said.

Pending legislation

The House of Representatives' Committee on Banking, Finance and Urban Affairs recently approved a bill, called the Comprehensive Money Laundering Prevention Act, that is expected to be wrapped into a package of antidrug legislation that is headed for enactment before the November elections.

Under the bill, banks would have to keep and maintain records on all purchases and purchasers of money orders, wire transfers, bank checks, cashiers' checks and travelers' checks of more than $3,000. In addition, the bill gives the U.S. Treasury Department subpoena power over the cash transaction records, a provision that critics say is an invasion of privacy.

For the duration of the test program, the participating banks will file both magnetic tape and paper reports, the IRS spokesman said.

Apple aims graphics-oriented IIGS at educational, hobbyist markets

By Peggy Watt

CUPERTINO, Calif. — Apple Computer, Inc. is set to introduce today the high-end Apple IIGS, a system that features enhanced graphics and sound capabilities and includes part of the Macintosh interface in read-only memory (ROM).

Despite its new 16-bit architecture and expandability to 8M bytes of random-access memory (RAM), the machine is aimed strictly at the educational and hobbyist markets.

"Apple as a company tends to continue to reinvent itself, and, really, this is a move to make Apple Computer a small computer systems company" with several distinct, growing product families targeting different markets, said John Sculley, Apple president and chief executive officer.

Though some businesses adopted the Apple II when it ushered in the microcomputer market 10 years ago and though a respectable library of business products still exists for it, the Apple II line has waned in business to focus on home and education markets. The Macintosh has taken up Apple's business banner.

Several business programs, however, are among the 40 software an-

nouncements scheduled to accompany Apple's introduction.

The Apple IIGS runs on a 16-bit Motorola, Inc. 65816 microprocessor, compatible with the 6502 chip in the Apple II family, with a communications chip that supports the Appletalk network. It has 256K bytes of standard RAM, and its 128K bytes of standard ROM can be expanded to 1M byte and can contain pull-down menus, windows and icons similar to the Macintosh interface.

The IIGS has eight expansion slots and two serial ports. The system comes with Apple's Desktop Mouse, and its custom graphics chip provides two high-resolution modes: 640 by 200 pixels and 320 by 200 pixels, with a palette of 4,064 colors.

The IIGS's $999 base price includes neither monitor nor disk drive. The system will cost $1,866 with an Applecolor RGB Monitor and one 5¼-in. floppy disk drive and controller.

Apple is also scheduled to introduce the 20M-byte Hard Disk 20SC, priced at $1,299, which connects to the small computer systems interface port in the IIGS and the Macintosh Plus.

NEWS

AFIPS telecom conference elicits lukewarm interest, turnout

Sprint, Timeplex, Rolm stay home

By Mitch Betts

PHILADELPHIA — The American Federation of Information Processing Societies, Inc.'s (AFIPS) new convention offering, NCC Telecommunications '86, held here last week, got off to a shaky start with a dearth of attendees, vendors and product introductions.

IBM, AT&T, Northern Telecom, Inc. and Racal-Milgo, Inc. were among the major

exhibitors at the show, but MCI Communications Corp., U.S. Sprint Communications Co., Timeplex, Inc. and Rolm Corp. stayed away. Some vendors said they were holding product announcements for the Tele-Communications Association's annual conference later this month.

Avant-Garde Computing, Inc., based in Mt. Laurel, N.J., garnered the spotlight at NCC Telecommunications with the only major product announcement, Release 6.0 of its Net/Alert network monitoring system.

The enhanced system has

software that enables users of IBM Personal Computer ATs or compatibles to manipulate network performance and usage data in any format. It also provides transaction monitoring to pinpoint network problems, the vendor said.

A Net/Alert system monitoring 32 lines costs $40,000, and the new release will be available in January, the vendor said.

Also, Progressive Computing, Inc., a four-person firm based in Glen Ellyn, Ill., unveiled its second product, a dual-line monitor for net-

work control centers. The LM-2, which costs $3,750, reportedly turns an IBM-compatible microcomputer into a monitor for two data lines by using two expansion boards and software. A single-line monitor, the LM-1, costs $1,950.

The conference did not come close to reaching its goal of 8,000 to 10,000 attendees, and only 67 vendors showed up to ply their wares at exhibit booths. Moreover, the slate of 18 half-day professional development seminars was canceled for lack of registrants, officials said.

Carl E. Kleckner, the conference chairman, downplayed the low attendance and said that the show met its goal of establishing a high-quality conference program as a base for future shows.

"We weren't shooting for any number [of attendees]," said Kleckner, general manager of Bell Atlantic Management Services, Inc.

Vendors originally were told to expect 8,000 to 10,000 attendees, a range that was revised downward to between 3,000 and 5,000 a few days before the show.

VIEWPOINT

The next revolution

In the world of technology, what appear to be minor ripples occasionally mark the beginning of tidal changes. Think, for example, of the early build-your-own-microcomputer kits or the first humble modems. At the time, neither seemed a likely harbinger of the subsequent sea change effected first by personal computing, then by telecommunications.

Which brings us to recent announcements of products incorporating artificial intelligence, announcements that could understandably be dismissed as relatively minor steps in a field noted for its overly optimistic proclamations.

However, at least one of these recent developments — an expert system shell that can be embedded in mainframe applications — could signal the impending arrival of what some observers see as the next watershed in computing: the long-promised, real-world application of artificial intelligence. Written in Cobol, this shell is the best attempt yet to bring AI technology into mainstream information processing, and it is not unreasonably optimistic to imagine that products like it will follow from vendors on the forefront of this technology.

If these initial products live up to their advance billing, they present an ideal opportunity for MIS to help shape the further application of AI technologies. Builders of expert systems and expert system shells must be convinced that inference engines can and should be built in mainstream programming languages, including Cobol. Existing MIS staffs should be encouraged to explore expert systems technology; new staffs should include graduates of traditional programming courses who are eager to get into this leading-edge technology. MIS managers need not feel obligated to hire a stable of LISP or Prolog programmers who have never dealt with an accounting office or factory floor.

In addition, MIS managers need to be on the lookout for the advances in AI that offer huge strides in making their established systems easier to use. Information centers may one day be the biggest beneficiaries of AI as natural language interfaces and other ease-of-use features become available.

By asserting their leadership now, MIS managers achieve two critical gains: first, the ability to influence vendors to abandon their focus on stand-alone solutions and instead develop AI products that work with the billions of dollars of equipment that corporations already own; second, the status of being movers, rather than responders, during this next phase of the computer revolution.

Notes & observations

What some hailed as a victory two months ago turned to clear defeat this week. In July, gleeful semiconductor makers hailed the just-signed pact between the U.S. and Japan prohibiting dumping of semiconductor chips in this country. Now, 40 U.S. computer equipment vendors are warning they may be forced to move their facilities, and countless manufacturing jobs, offshore in order to remain competitive. Why? Chip prices have risen as much as 600% in the wake of the pact. The message is clear: Measures inhibiting free and open trade are once more proven to be folly of no small magnitude.

A COMPUTERWORLD TV FANTASY

"MIAMI VICE", desperate for non-drug-related material, turns to computer crime.

FREEZE, CHIP-HEADS!

DP DEPT.

T1 standardization not a conspiracy

The article, "Code snafu threatens T1 private nets" [CW, June 30], states that users of private high-speed telecommunications lines are unknowingly staking their network operations in a game of Russian roulette because of a code standard adopted three years ago by the T1 equipment industry.

It is my opinion that network operations are not subject to such a game. The network is fairly well defined as to what it is doing. The article was accurate in stating that the vendors and carriers are split into rival interest groups with conflicting views, but it tends to highlight or elaborate only the views of one group. The claim that no one is bothering to inform T1 users who encounter problems without realizing what hit them is not totally true either. The T1 committee that you refer to, the T1C1.2 subcommittee, has user representatives, as does the Exchange Carriers Standards Association (ECSA) T1 parent committee. All documents submitted to this committee are circulated to a mailing list of approximately 80 people, and any final standards have an even wider distribution before approval by the American National Standards Institute (ANSI).

Some clarifying facts follow:

• The standard codes that were adopted were done so by the Federal Communications Commission, not by the T1 equipment industry or any industry standards body.

• The groups are indeed divided on the resolution of the issue. It is proposed by some that all of the customer service units (CSU) have their loopback codes changed. The impact of this, of course, is that every end user with a CSU would have to have it changed. This would be a boon to the CSU manufacturers, as they would have an opportunity to sell all new CSUs. Users would obviously not take well to this.

The T1C1.2 subcommittee is considering all proposals to resolve the problem. As many exchange carriers and most interexchange carriers participate in T1C1.2, their companies are well aware of the potential problem.

In order to stop the problem from proliferating, it is proposed that we define it as best we can and put strong cautions in the pending T1C1.2 T1 customer interface document. We are inviting input from anybody in the industry, including Lynch Communications Systems, Inc. or *Computerworld*, that would provide an adequate warning and meet ANSI standards. If customers require protection switches from their carrier, they should ask for a logical protection switch instead of a switch that works on bipolar violations. As I understand it, AT&T has a tariff on such provision.

As the newly elected chairman of the T1C1.2 committee and a member of the ECSA, I don't appreciate the subtle innuendo that the standards process is a conspiracy against our customers.

William J. Buckley
Director of Technology Planning
Verilink Corp.
San Jose, Calif.

Products reflect industry's image

Your editorial, "Protecting user rights" [CW, Aug. 11], displays a complete lack of responsibility with regard to product liability. Furthermore, if the entire computer industry were to run blissfully ignorant and contrary to basic consumer rights, it would run contrary to our system of government and a rational economy.

The editorial correctly states that firms with quality assurance and legal departments would remain competitive, while those without would die. We have, fortunately or unfortunately, set up a system whereby people desiring to make their fortune by selling something must do so with regard to regulations designed to shield the American consumer from an unqualified manufacturer.

The shortcut we are talking about in relation to software is the entry of a product into the market that has not been fully tested or, worse yet, was released with known problems. Firms actually expecting money in return for such dubious products owe it to the image of the industry at large to hire quality assurance and legal personnel, or else the product deserves to wither on the monetary vine.

It is much more important that individual rights, that is, those of companies as well as specific people, be maintained rather than sustaining the plethora of nonworking or poorly functioning computer software, especially in the face of such flawed reasoning as that given in the editorial. To "stifle innovative research and development" at firms that release such software would be acceptable when the alternative is considered: the improvement of the American computer industry's image as a whole.

Chris R. Powell
Endicott, N.Y.

VIEWPOINT

Forty-bit architecture: Latest in push for more power

Picture yourself in this fictionalized conversation that I recently "overheard" at a fern bar in Menlo Park, Calif. Your day has ended, you're meeting a former company friend who has left for greener pastures and you're ready for some relaxing conversation. By the way, you're Bill.

"Bill, we're going to have to get you out to the lab one of these days. You'd be amazed at how much the place has grown, and we'll probably have our 40-bit machine in soon, so you'll get a chance to tinker with that."

"Forty bits? As in four zero?"

"That's what I said, 40 bits."

"What do you need 40 bits for?"

"Surely you jest, Bill. With 40 bits, I've got symbolic processing capabilities in a tagged architecture. And then some."

"Jeez, we never even got around to upgrading to 32-bit machines in our department."

"Are you kidding me? How do you guys do full three-dimensional simulation and wire-frame modeling?"

"Well, we don't do any of that stuff. We do . . . you know . . . inventory reports and general batch processing stuff."

The conversation comes to a screaming halt, followed by an uneasy silence. A very long pause ensues, then comes the final, almost

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Newquist writes and consults on artificial intelligence and other advanced high-technology topics from his office in Scottsdale, Ariz.

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condescending, remark.

"If that's all you're doing, why don't you just get a Commodore 64 and save yourself some money?"

Don't you just hate it when somebody talks to you like this? And this type of conversation is going to get more and more prevalent in the future.

Standard machines

In the world of science and engineering applications, 32-bit machines are already standard, and they are very close to being standard in almost every other kind of computing environment. On that science and engineering front, the ability to manipulate complex graphics and perform real-time simulation with 32

By HARVEY P. NEWQUIST

bits has propelled companies like Sun Microsystems, Inc. and Apollo Computer, Inc. to the forefront of the hardware industry.

Unfortunately, like almost everything else in the computer industry, the allure of 32 bits may be a fleeting thing. The computer industry of late never stays in anyone's corner too long, so even 32-bit machines have the potential to become tomorrow's Hula Hoops and leisure suits. These days, a number of companies have bigger things in mind.

For instance, Symbolics, Inc. of Cambridge, Mass., has already taken this a step further. Symbolics is the leading vendor of LISP machines and

bases its hardware on a 36-bit, or tagged, architecture. With tagging, we have an example of near-ultimate hardware control.

The additional four bits provide an optimum level of control because they act as pointers to the primary 32 bits, assisting hardware by directing process functions.

Now, the reason this architecture first showed up in LISP machines is because LISP views both data and functions as information, and adding more bits helps to identify more efficiently data vs. function information.

You almost get a synergistic alliance between hardware and software in this environment. Still with me?

Things do not stop at 36 bits. A start-up called Integrated Inference Machines, Inc. in Anaheim, Calif., has put the 32-bit boys in their place once and for all with the launch of its SM45000 machine, which contains 40 bits.

That's right, 40 bits. Four zero.

Off-the-shelf components

The SM45000 includes an internal memory and 20G bytes of addressable memory. Ethernet is supported. High-resolution monochrome and color graphics will be possible via bit-mapped graphics displays. And the hardware is built with off-the-shelf components.

This whole package is only going

to set you back about $40,000, which, in my mind, appears to be a very good deal.

Okay, up until now, you've begun to see the logic in using 32 bits, and maybe you can even begin to swallow what 36 bits is all about. But why 40 bits?

Well, remember how the four additional bits in a 36-bit machine help to control more efficiently the running of programs? Well, just imagine how much more efficiently four additional bits would run.

You cannot imagine that? Don't worry, almost nobody else can either. Yet.

Figuring out the unknown

It is like still trying to figure out what the IBM RT Personal Computer is all about without having done any work on it. Most people are asking themselves, What do I get out of this reduced instruction set computing, or RISC, stuff other than a new acronym to memorize?

Not many people have spent time on an RT PC, so there are a lot more questions than answers. And since nobody has done any work with 40-bit architectures yet, there are only questions. No answers. No solutions. Sorry.

So If I were you, Bill, I'd go back to the fern bar, listen politely to your associate's conversation and ask more questions about 40-bit architecture.

Chances are the answers will be a while in coming, so you'll have time for a drink. Perhaps a few months' worth of drinks.

Anticipate network disasters; seek appropriate solutions

The concepts of conventional DP backup and disaster recovery, along with their related problems, are second nature today to DP managers. Telecommunications backup, however, has always been a thorny problem, and one that has become even more critical in recent years.

To a very high degree, advances in computer and communications technology have made U.S. society vulnerable, perhaps even fragile. We now have the ability to communicate with all parts of the globe easily, swiftly, inexpensively and accurately. Yet the complexity and cost of backing up the technology that allows such communications has made adequate security very difficult.

In addition, we have become a prisoner of our networks. They have become essential to the routine functioning of society, yet they can be rather easily disrupted. As networks become even more commonplace, the seriousness of this dilemma will grow geometrically. Imagine how difficult

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Karten has been involved with computers for two decades as a programmer, systems analyst and DP manager and is author of How to Profit from Dow Jones News/Retrieval.

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it would be to get an airline seat without airline reservation networks. Yet it is no longer possible to have workable, affordable backups to such systems.

If only one company's network facilities were disrupted — say, by a disaster at company headquarters — the company would probably have several options. It might be able to come up with a work-around system fairly quickly. It might be able to reorder circuits quickly, though re-establishing a network quickly would be very costly. The company might, in fact, be so damaged that it would go under.

A corporate victim

By HOWARD A. KARTEN

might decide that the costs of spending freely to get its network re-established were worth it. But a natural or man-made disaster affecting 10 companies, or 100, would be a disaster of a different magnitude. The telephone companies do not have enough manpower to replace all that cabling and all those microwave towers.

Meanwhile, many of those nations we have traditionally regarded as real or potential enemies are in a better network position than we are. Those countries all lag behind the

U.S. technologically, operate fewer networks and have a low dependence on those networks.

This is by no means academic. Skeptics in the audience may recall a few years ago when a newly launched satellite went astray. A good deal of its capacity had already been contracted for, and when the satellite was unavailable, there was a lot of anguished corporate hair-pulling. In a sense, those corporate users were fortunate in that they had not yet become hooked on those communications services.

Consider this scenario: In 1988, the TAC-8 transatlantic cable, an optical-fiber cable that can carry an enormous number of conversations simultaneously, will go into service.

To attract customers for the sudden excess capacity, prices are lowered. Corporate customers, recognizing the new economic attractiveness of on-line links to their European operations, proceed with long-held plans and sign up in droves.
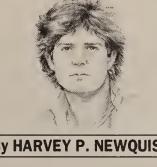
After a few years, even though prices may have risen, customers are dependent on the on-line link. Then,

a fishing trawler accidentally severs the cable (this happens periodically with copper cable), or one of the buildings that is part of the cable system is wiped out by a fire.

What then? The cable would be out of operation for days or even longer. Planning and laying a new cable takes years; satellites as replacements cannot be placed in orbit on a moment's notice. The more dependent users would be up the creek.

Paradoxically, the U.S. telephone system as a whole includes components, such as switches, that are decades old. Yet it's remarkably disaster resistant. When disaster strikes a part of it, the rest remains operational and largely unaffected.

What does this all mean for DP personnel? Clearly, they have more of a stake in anticipating disasters — including terrorism — than heretofore realized. In some cases, what is at stake is the lives of their companies.

DP staff members have repeatedly shown themselves to be clever, talented folks. They should lend their voices to an open discussion of the risks associated with our growing communications network, one that would help both to educate our elected representatives to the policy implications and to push vendors to come up with appropriate solutions.

SOFTWARE & SERVICES

SOFTALK
Charles Babcock

Don't overlook SQL's flaws

At roughly the same time that IBM's SQL has emerged as a standard, an effective body of criticism has emerged citing its short-comings.

One critic is Nicholas A. Rawlings, director and senior technical advisor of D & B Computing Services, Inc. of Wilton, Conn., who has written a short paper entitled, "SQL, Why All the Fuss?" Another is Stephen J. Gerrard, vice-president and director of product marketing for Applied Data Research, Inc. of Princeton, N.J., who spoke on SQL at the Software Trends for Executive Planning and Strategy conference recently in Burlington, Mass., and has since authored a paper entitled, "The Dark Side of SQL."

These two commentators are both representatives of independent software vendors trying to compete with IBM in fourth-generation languages and relational data base management systems, and their comments have to be taken in that light. Nevertheless, they touch on certain weaknesses of SQL that current market enthusiasm is likely to overlook.

It is necessary to say at the start that SQL's popularity exceeds any claims made for it by IBM. It is a set of about a dozen commands for the querying, definition and maintenance of data in relational data base management systems. Despite its name, SQL, or Structured Query Language, doesn't exist as an independent language. Rather, it must be embedded in programs written

Babcock is Computerworld's *senior editor, software & services.*

Interface aids DB2 use

Deere implements Intellect revamp, enlarges user base

By Charles Babcock

MOLINE, Ill. — At Deere & Co., a natural language interface in use with IBM's relational data base management system is "going to broaden the user community for DB2," predicted David C. Smith, manager of productivity aids for the Moline-based farm equipment manufacturer.

Deere, one of the first companies to implement DB2 as a production system three years ago, has enhanced it with Intellect, a natural language query, analysis and reporting system.

The DB2 interface is an addition to Intellect, a product of the Artificial Intelligence Corp. of Waltham, Mass. The interface is able to generate IBM SQL queries from simple English-language statements, according to new Artificial Intelligence President Robert Goldman, who was formerly president of Cullinet Software, Inc.

At Deere, the interface is being used with 19 production applications. Although complicated applications need programmers to set up the Intellect lexicon, the interface was applied by nonprogrammers in some cases, Smith said.

The purpose of testing the interface, he added, is to allow "anybody, from the chairman of the board to the shop floor people" to make use of DB2 — especially managers. Many managers do not have time to undertake extensive computer training; they can be trained to use Intellect in half a day, Smith said.

The applications in use with the Intellect DB2 interface include the personnel reporting system; the parts data base application, which stores records on over a million machinery parts; and an inventory of software product usage, Smith said.

With proper programmer preparation, Intellect can respond to the ambiguities of the English language. In a demonstration,

Unrestricted access tops bankers' security worries, survey shows

By Eddy Goldberg

ROLLING MEADOWS, Ill. — Bank employees with unrestricted micro-to-mainframe access to corporate data are the greatest threat to data integrity, according to a recent survey.

The survey asked data security officers at 100 of the nation's largest institutions to identify their areas of concern; what emerged were 16 commonly identified problems.

Unrestricted access, however, outstripped all others, and the threat from such access is expected to grow with the increasing use of microcomputers by bank employees, according to the study, which will be released next month by the Bank Administration Institute (BAI) of Rolling Meadows.

The institute, supported by 9,000 banking institutions, is a leading research and

education group in the banking industry. It has a lower profile than the American Bankers Association, which comments on public issues and engages in lobbying.

Second on the list of threats to bank data security was the likelihood of employee error stemming from honest mistakes or technical ignorance. Dishonest intent placed third, while danger from hackers and deliberate random electronic invasion rated last of the 16 areas of concern.

Banks are still safer places for money than mattresses, said Steven E. Weiland, principal research manager at BAI's Center for Data Security. "My impression is that financial data security is fairly sophisticated, perhaps a considerable step ahead of other industries," Weiland pointed out.

INSTANT ANALYSIS

"Corporate America is shifting its attention from the automation of basic, clerical, 'back-office' functions to 'mission-critical' applications that automate the essential elements of a company's operations."
Research report from Alex Brown & Sons, Baltimore

CONTINUOUS INNOVATION

COMMUNICATIONS

DATA BASE

WORD PROCESSING

GRAPHICS

1-2-3 SPREADSHEET TECHNOLOGY

SYMPHONY ADD-INS → SPELLING CHECKER → TEXT OUTLINER → SYMPHONY LINK

SYSTEM

SOFTWARE & SERVICES

Interface aids use of DB2

the product responded to a query for a list of the employees of a company located in Chicago and New York by determining from the context that the reference was to New York City and not to the state. When Chicago was not included in the query, a prompt appeared asking whether the user meant city or state.

A query to a company personnel data base — such as "Who drives a Subaru and uses Mastercard?" — generated an 11-line SQL statement that produced a list of employees.

With an installed base of 450 after its introduction four years ago, Intel-

lect cannot be regarded as a barn-burner of a product. "I like natural language, but it is still not a market that is booming," said Esther Dyson, publisher of "Release 1.0," a computer industry newsletter.

"It may be very intelligent, but it doesn't know anything about 'best salesman' until you have defined what you mean," Dyson said. Establishing the product's lexicon specific to a user's application "requires a lot of programmers' work," she added.

With few IBM sites using DB2 for production, Dyson recommended a natural language interface for IBM's Information Management System, a prospect Artificial Intelligence says it is not considering at the moment. The company wanted to produce an interface applicable to where users will be in the future rather than where they are now, according to

Chairman Larry R. Harris.

Although customers typically add words to Intellect's 1,000-word lexicon as they develop applications, the DB2 interface allows users to access the contents of the data base as if those contents were an extension of the lexicon, Harris said.

Goldman said Artificial Intelligence's previous experience in developing an SQL interface for Digital Equipment Corp.'s relational data base management system, RDB, supplied the company with the expertise needed to develop the DB2 interface.

To Smith, it is now easy to take Intellect and "point it at one of the DB2 tables and add a little fluency to the lexicon." The interface reads the tables, columns and indexes in the DB2 catalog and adds the information to the lexicon, making it easier for users to access what they want, Smith said.

Access tops bankers' worries

Ninety-nine of the 100 institutions surveyed employed a microcomputer access control package. In addition, many institutions use established mainframe security software, such as ACF II from the Cambridge Systems Group of Los Altos Hills, Calif., CA/Top Secret from Computer Associates International, Inc. of Garden City, N.Y., or RACF, the IBM security product. But these packages do not control all aspects of data integrity, Weiland said.

In the survey of 107 major U.S. banks, 85% of all respondents said they permit downloading of mainframe programs and data, while 53% allow uploading.

Bank data security administrators, the primary respondents in the survey, expressed concern over integrity problems inherent in uploading, Weiland said. About 55% of data security personnel report to DP, he noted.

While bank data processing officials are comfortable with downloading data, they "don't like the idea of uploading to the host," said Steve Mar, chairman of BAI's Data Security Committee. Mar is vice-president and manager of the Bank of America National Trust & Savings Association's Control Services Division Management Reporting unit.

"With many terminals updating a file, allowing access from many sources may result in simultaneous changes or obsolete data being used," Mar said.

A second phase of the study, planned for presentation at BAI's fifth annual Bank Data Security Technical Symposium in February 1987, will be a how-to report on microcomputer data security issues, prepared with Big Eight accounting firm Ernst & Whinney.

Don't overlook SQL's flaws

in assembler, Cobol or other third-generation languages where it opens the door to the data in a relational data base.

"Such a combination of a query language and primitive languages 'is much less productive than using a fourth-generation language designed for general applications,'" writes Rawlings, citing an assessment from the "James Martin 1984 Report on High Productivity Languages."

SQL is used by IBM to access data in DB2, its MVS relational DBMS product, and the smaller SQL/DS DBMS, its VM relational product. Here Gerrard makes a telling point by saying "not all SQLs are created equal." Even within its own product line, IBM's SQL varies between its two DBMS and also from ANSI-standard SQL. For this reason, customers are advised to ask, How "standard" are other vendors' products?

Because SQL only addresses data manipulation, there has been "precious little thought given to the larg-

SOFTWARE & SERVICES

Don't forget SQL's flaws

er issues of application development," Gerrard adds. The logical constructs of a full programming language, like IF and LOOP statements, are not available in SQL.

An application developer who needs the resources of SQL "must learn two languages and switch back and forth between them," he writes.

Even within its allotted function, SQL is difficult to use unless one is a practiced SQL programmer. One of the benefits of relational data base management systems is that they offer more options of combining and retrieving data without highly structured, preset data paths.

This gain is somewhat negated for end users if only the simplest queries can be formulated by the uninitiated. Gerrard says that end users and many DP workers alike will find more complex SQL operations beyond their grasp.

"Because of the academically precise nature of SQL, users can often invoke operations they don't mean to invoke. This raises the distinct possibility of consuming large amounts of computer resources inadvertently. Or worse, people can believe they are asking for one thing while SQL believes they are asking for something entirely different," Gerrard writes.

If these comments are correct, one can indeed ask, What is all the fuss over SQL? Both Rawlings and Gerrard provide a partial an-

> 'Because of the academically precise nature of SQL, users can often invoke operations they don't mean to invoke.'
> — Stephen J. Gerrard
> Applied Data Research, Inc.

swer, conceding many of the strengths of SQL.

One SQL expression dictates the manipulation of an entire set of records used in the operation, rather than record-at-a-time methods.

This set orientation permits the programmer to concentrate on the business problem rather than forcing him "to grapple with navigating through the DBMS structure," Gerrard writes.

Set-oriented languages rely upon the sophistication of the underlying DBMS to determine the best way to locate the data.

"This has the potential of removing a lot of clutter from the statement of the problem, enhancing maintenance as well as initial development," Gerrard writes.

The contribution of SQL appears to be its logical foundation, something like the Ted Codd model for relational DBMS.

SQL provides a rigorous, mathematical method for data manipulation and allows for highly complex operations without a loss in precision.

But as Rawlings and Gerrard point out, this strength is also a weakness when it comes to solving the problems confronted by MIS departments.

SQL by itself can do little to ease the applications backlog. To address that need, SQL is going to have to be made to work in conjunction with user-friendly programming languages or find its way into a new set of products.

COMMUNICATIONS

DATA STREAM
Elisabeth Horwitt

Tying the PC to OA systems

During the next year or two, we are likely to see a lot of VAXs and Microvaxes invading that hitherto impregnable bastion of IB-Mism, the Fortune 1,000 service company. Digital Equipment Corp.'s recent introduction of the Vaxmate and complementary Microsoft Corp. MS-DOS-to-VMS and MS-Net-to-Decnet communications software makes it a virtual (if you'll pardon the pun) certainty.

Like all the major minicomputer vendors, DEC has dreamed of coming between the IBM Personal Computer and the IBM mainframe. With increasing success, DEC has sold its VAX line as a way to bridge IBM's still-yawning communications gap.

IBM has not moved fast enough to address the needs of its own customers. MIS managers in IBM shops have been stuck on the horns of the dilemma.

On the one hand, they are struggling to provide corporate data and computing resources to hordes of hungry PC users; on the other, they are trying to protect production data bases and prevent the IBM mainframes from going down in a sea of queries.

Enter the departmental processor office automation solution. Instead of accessing the mainframes directly, users can share subsets of corporate data, as well as information specific to their departments, on a minicomputer that acts as liaison and coordinator of micro-to-mainframe communications.

It also enables PC users to schedule meetings, share printers and other peripherals. See **TYING** page 33

Horwitt is Computerworld's *senior editor, communications.*

VMI links PC, DEC hosts

Network Coprocessor runs with MS-Net LANs

By Elisabeth Horwitt
BERKELEY, Calif. — The Network Coprocessor, introduced recently by Virtual Microsystems, Inc. (VMI), makes Digital Equipment Corp. VAX and Microvax II hosts accessible to IBM Personal Computers on any Microsoft Corp. MS-DOS 3.1-compatible network, according to VMI.

VMI Chief Operating Officer Gianluca Rattazi said that the product both competes with and complements recent software releases by DEC that integrate the IBM PC and MS-Net software with the VAX VMS and Decnet communications environments.

The Network Coprocessor connects IBM PCs on MS-Net-compatible local-area networks (LAN) with a single VAX or Microvax II, a group of VAXs and Microvax IIs on Decnet or with a Vaxcluster, Rattazi noted. VMI's previously announced V-Drive enables PC users to toggle between

IBM PC-DOS and VMS environments with one keystroke.

Software residing on the Network Coprocessor allows users to operate VAX functions with common PC-DOS commands. For example, users can copy files between a local floppy disk and any VAX on Decnet. "If you are on a PC, our product makes a VAX look like a large Personal Computer AT," Rattazi said.

The Network Coprocessor broadens the options available to companies that want to integrate IBM PCs and VAX systems, Rattazi claimed.

DEC's newly released software packages, PC All-In-1 and VAX VMS Services for MS-DOS, were designed for use with DEC's own version of Ethernet, he pointed out. "With our product, you can use 3Com Corp.'s Etherseries, Ungermann-Bass, Inc.'s Net/One or the IBM Token-Ring — any network that supports MS-Net protocols."

By linking up an IBM PC LAN with a group of VAXs on Decnet, users have the option of storing files on a VAX or a file
See **VMI** page 35

ITT Courier's IBM connectivity line expanded

By Donna Raimondi
TEMPE, Ariz. — ITT Courier Terminal Systems, Inc. has unwrapped a series of printers, controllers, micro-to-mainframe links and other products designed to expand its connectivity options in Fortune 1,000 companies running IBM mainframes.

The announcements included printer and workstation controllers along with an asynchronous device adapter, enhancements to existing controllers and displays, a laser printer, micro-to-mainframe links and two display connectors.

The $1,400 ITT 9321 printer controller permits printers with RS-232C interfaces to be integrated into the ITT 9000 line of
See **ITT** page 35

Davox targets vertical marts

By Stanley Gibson and Elisabeth Horwitt
BILLERICA, Mass. — Seeking to broaden its products' appeal in the public utilities and financial markets, which are its primary targets, Davox Corp. last week introduced two voice/data workstations with expanded terminal emulation functionality and a computerized autodialing telephone management system.

"We have already shipped significant numbers of workstations to users that need to access multiple data bases while talking on the telephone," said Davox President Daniel A. Hosage. The firm's decision to concentrate on the financial and public utilities companies was made approximately a year and a half ago out of
See **DAVOX** page 32

INSTANT ANALYSIS

"The whole purpose of Open Network Architecture is to make the same basic service elements equally available to both the divested Bell operating companies and their competitors. But we still don't know whether we'll have five basic services or 500."
— Wayne Masters, district staff manager, federal regulatory, Southwestern Bell Telephone Co.

Motorola Introduces Peaceful Coexistence.

Our new family of supermicros can end the incompatibility battles between vendors. Between architectures. Between MIS/DP and the end user. Even between new systems and old.

For example, the new VISION/32 system is uniquely capable of letting you expand or coexist with your current VISION-based Motorola systems easily and painlessly. With no major breaks in operation. And no loss of investment.

The open architecture and open operating system of our new supermicros also allow them to peacefully coexist within most environments, including IBM. And within multi-vendor solutions.

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And with our networks and communications capabilities, entire departments can coexist. Share information and peripherals. And communicate. With each other. With other departments. Even with the headquarters mainframe.

Whether you're an end user or VAR. Big or small. We can configure a multi-user, multi-tasking, multi-vendor system that will make everyone happy. Think of us not just as computer manufacturers but as consultants. The Peacemaker in the Computer Wars.

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COMMUNICATIONS

Davox targets vertical marts

desperation, he added.

Davox had discovered the hard way that it could not "sell users on technology alone. So we analyzed the few places where we were making sales and developed a focused marketing strategy," Hosage said.

Davox now presents its Series 4900 and Series 5900 voice/data workstations as solutions to specific problems that are crucial to a given industry, according to Hosage. "With public utilities like Bell South Corp., which is one of our biggest customers, it's customer service. Businessmen call to say 'my PBX isn't working.' Bell South service representatives use data bases that reside on a mixture of IBM and Digital Equipment Corp. computers. With our workstation, they can call up the information they need to service the customer while on the phone."

The Series 4900 and 5900 workstations add windowing and DEC VT 220 terminal emulation to the features of the Davox Series 1900, which offers IBM 3270, asynchronous and voice features. "This enables a service representative to call up to four windows on the screen, each representing a different DEC or IBM data base: For example, what diagnostic test is being used in the first window, service crew availability on the second, the customer's equipment base on a third and so on," Hosage said.

The new terminals were designed to work with DEC and IBM computers but can be adapted to other asynchronous hosts, such as Hewlett-Packard Co., Wang Laboratories, Inc. and Data General Corp. machines, according to Davox spokesman Bill Bradley.

The Series 4900, priced at $2,695, has a green or amber monochrome display, while the Series 5900, offered for $2,995, has a color display. The workstations are available immediately, according to Davox.

The Computerized Autodial System (CAS) was designed for uses that require a high volume of outbound calls and the simultaneous display of account information from a computer file to process those calls.

The Davox equipment dials numbers until a voice response is heard. The system then alerts a customer service representative to the call and displays the cardholder's account information on the representative's screen. The information was downloaded from a mainframe.

Hosage said CAS is well suited to bank card credit collection applications, in which thousands of calls may be made in a day. "This type of application hits a financial company like Citibank N.A. — another of our large customers — right in the breadbasket, because we're showing them how to reduce costs in money collection, which is a big part of their business."

CAS, available in January, is priced at $125,000.

According to Hosage, "last year we had $7.5 million in sales; this year we're more than doubling that. More than 60% of this year's sales is in the financial industry, 20% to 30% in public utilities. Most important, we're finally profitable."

Silicon Graphics workstation net debuts

By Rosemary Hamilton

MOUNTAIN VIEW, Calif. — Responding to user demand for a more effective way to link its workstations to other vendors' systems, Silicon Graphics, Inc. recently introduced a networking system that features built-in support of the multivendor communications protocol, Transmission Control Protocol/Internet Protocol (TCP/IP).

Geometrynet Ethernet, a local-area network interface, will be a standard feature of all Silicon Graphics Iris workstations. Optional add-ons will give Iris users access to Digital Equipment Corp., IBM and other hosts. Optional support for the Xerox Corp. Xerox Network System (XNS) is also available for $1,200.

Prior to Geometrynet's introduction, Silicon Graphics had an XNS-based Ethernet network that offered optional support of TCP/IP.

Users can purchase a Network File System (NFS) component for $2,000 per workstation node. NFS, a Sun Microsystems, Inc. product, was licensed by Silicon Graphics this year. With the NFS option, which will be available in November, Iris users can transfer files among the workstations or other systems that are also running NFS.

Another Geometrynet option, IBM-Link, enables Iris workstations to emulate IBM 3270 terminals and access an IBM host running the IBM VM/CMS operating system. An MVS version of IBMLink, also priced at $5,000, is expected to be released in November.

The vendor also plans to release its $1,200 Remote Graphics Library component for DEC VAX and Microvax systems in November. The Remote Graphics Library is a data base of graphics subroutines that allow DEC users to write programs supporting three-dimensional graphics.

Once it is written, a program can be transmitted via the Ethernet network to an Iris workstation for processing. The Iris workstation includes a proprietary Geometry Engine designed for processing three-dimensional data.

COMMUNICATIONS

Tying the PC to OA systems

pherals and exchange electronic mail both within local work groups and with users attached to other systems — including IBM mainframes. This global or enterprise network makes information and computing resources available to all users within an organization.

That's the ideal. But it is easier to envision than achieve, because no one vendor has been able to provide — let alone connect — all the pieces. IBM, with its huge installed base of PCs and mainframes, is the obvious candidate. But Big Blue is considered by many to be furthest behind in

> **Big Blue is considered by many to be furthest behind in terms of an integrated OA communications solution.**

terms of linking its various computer lines with an integrated OA communications solution.

In the past year, most major systems vendors, including DEC, either announced or began shipping gateways between their own communications environments and IBM's Systems Network Architecture, LU6.2 and Distributed Office Systems.

Not a bad start, but up to now the mini vendors have been no more successful than IBM in integrating the IBM PC into a departmental proces-

sor-based OA system. True, the IBM PC, as a terminal, can access just about anybody's office automation system. But what users want is a way to combine the wealth of software applications written for the IBM PC with the resource-sharing capabilities and power of a mini and the extended communications functionality of a proprietary OA system such as DEC's All-In-1.

With the combination of the Vaxmate workstation, the VAX VMS services for MS-DOS and PC All-In-1,

DEC has moved considerably closer to this goal. Instead of acting as a dumb terminal, a PC can create a file using the MS-DOS package of choice and then send it out via the All-In-1 electronic mail system. A group of IBM PCs can extract data from a data base in VAX VMS format and download it into a popular MS-DOS application format such as Sylk.
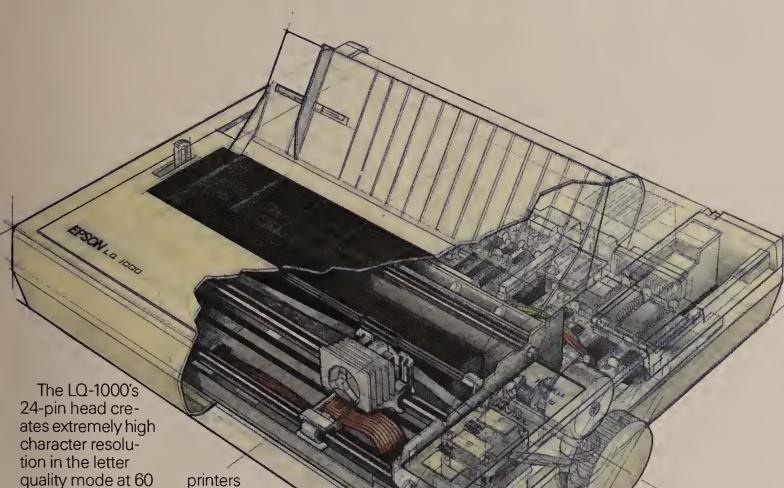
Naturally, consultants, journalists and cynical customers are waiting to try out this marvel before they pass judgment. A few doubts have already surfaced. For example, did DEC have to make Decnet a necessary part of the setup? Granted, the Ethernet-based network system provides far greater functionality than MS-Net, and customers still have access to applications written for MS-Net, such as Ashton-Tate's Dbase III. But there is, as yet, no DEC product that integrates IBM PC local-area networks such as PC Network or the IBM Token-Ring into the OA system.

Second, DEC still has some holes to fill before the Microvax II becomes a full-function OA server for IBM PCs. The communications and peripheral-sharing features are there but, as one consultant points out, "there is no way yet to store Multimate International Corp. Multimate on the VAX and then convert it into [DEC's word processing system] WPS+."

Third, there is simply no way to see how truly transparent and user-friendly this system is until it has been tested by nontechnical users in real working environments. Unfortunately, all that most customers can test right now is how the system works with DEC's own Vaxmate, which was designed from the ground up to be a Microvax II workstation as well as an IBM Personal Computer AT compatible.

The real test will come early next year, when the vaunted IBM PC upgrade kit arrives. Only then will users be able to find out for themselves whether DEC has, in fact, made the intransigently stand-alone IBM PC a cooperative member of its OA system.

COMMUNICATIONS

ITT Courier line expanded

IBM 3270-compatible remote and local controllers. Among the devices supported by the product are the Texas Instruments, Inc. 810, 850 and 880 printers, the Qume Corp. 1155 printer and the Hewlett-Packard Co. 7475A plotter.

The ITT 9425 is a tabletop 3270-compatible remote controller that supports from four to 32 workstations. The $3,600 controller can be substituted for comparable IBM controllers with no modification to mainframe hardware, system software or application software, ITT said.

The 9425 can be configured for a range of protocols, including bisynchronous, IBM Systems Network Architecture (SNA) and Synchronous Data Link Control (SDLC) and X.25. In SNA environments, 9425 users can toggle between two applications with no interruption to either session because of a dual logical unit feature, the company said.

The ITT Asynchronous Device Adapter (ADA) is a protocol converter that enables ASCII displays to access both SNA and ASCII host networks. ADA allows the ASCII display or a personal computer emulating a Digital Equipment Corp. VT100 or VT220 terminal to access either type of host through one connection using an ITT 9000 series controller. The $3,985 device supports up to eight ASCII devices.

Also announced was a compatible subset of IBM's Response Time Monitor (RTM) function for the ITT 9000 controllers. RTM measures and tabulates network response time for fine-tuning networks when new hardware or software applications are brought on-line. The free-of-charge controller software enhancement now allows support of RTM on SNA networks with Network Logical Data Manager host software.

Enhancements to ITT's 1778 display, which is a substitute for IBM 3178 or 3191 displays, include support of display-attached printer, continuous row and column indicator and a light-pen attachment for the amber phospor model. In addition, any mix of keyboards, including IBM C3 and C4 styles, can be supported without IBM controller restrictions.

The enhanced displays, ITT 1778 A1 (amber) and G1 (green), cost

VMI links PC to DEC hosts

server, such as Novell, Inc.'s Netware, Rattazi added. "We provide the glue between Ethernet and VAXs and let the customers choose what they want."

Based on the Intel Corp. 80286 microprocessor, the Network Coprocessor's expansion slots can support up to 10 MS-Net-compatible controller boards, VMI said.

The Unibus version of the Network Coprocessor starts at $11,000 and will be available Oct. 1. The Q-Bus version begins at $6,000 and will be available Nov. 1.

$1,295. A board to upgrade earlier models of the ITT 1778 with the new features costs $400.

ITT's 9370 Laserten printer is available for 3270-type terminals, IBM Personal Computers and compatibles and ITT local-area network systems. The 10 page/min printer allows access to as many as 19 font styles per page. Its resolution is 300 by 300 dot/in. and it produces letter-quality type in sizes from seven to 24 points, the vendor said.

The 9370, available immediately, costs $2,920 in a version that provides 128K bytes of memory. A 9370

> **The 9425 can toggle between two applications with no interruption.**

Plus model, available in October, has 512K bytes for enhanced graphics capabilities and costs $3,520.

ITT also announced two products that support the Digital Communications Associates, Inc. Irma terminal emulation board. The ITT Irma 95437 and the ITT Irma 7580 provide a mainframe link to ITT Xtra PCs and compatibles connected to ITT controllers.

The products are said to offer full Irma compatibility and come with an Irma 3278 emulation board and file transfer software. The 95437 card connects PCs directly to any ITT 9000 series bisynchronous or SNA/

SDLC controller (Models 9420 and 9425 remote and Model 9440 local). The 7580 card can be used with installed ITT C270 or 9000 controllers with C270 support. Both cards cost $1,195.

ITT also unwrapped two Coax Savers, connectors that allow two display terminals to share one cable for connection to the controller.

The ITT 94823 allows two displays to operate simultaneously over the same twisted-pair wiring. The 94823-C allows two displays to operate simultaneously over one coaxial cable.

With coaxial cable, displays may be located up to 1,500 feet away from the controller. The Coax Savers are sold in pairs. One connector is used at the controller and one is used to connect 3270 displays to the single cable. They cost $199 each.

SYSTEMS & PERIPHERALS

Looking out for little guys

Pity the little guys. Think of the men or women who work alone as consultants or as DP managers in one-person DP departments. On their own, they must recommend a system, oversee installation, program and manage operations and know when it is time for an upgrade.

They are the people who must decide what a small business needs to survive. Their reputations, not to mention their weekly grocery money, ride on those recommendations. Small business owners rely on these people to tell them whether to invest in a bunch of personal computers instead of a minicomputer. The owners need to know whether that minicomputer should be an IBM System/36, a Digital Equipment Corp. Microvax or something from a lesser known vendor.

These are low-budget, minimal-resources people. So, is it any surprise that when one of them heard a rumor that IBM might be making some product announcements that could affect him he merely groaned and complained that he just couldn't keep pace with the changes?

These lone wolves are still trying to absorb the details and understand the directions underlying IBM's June realignment of the System/36 and 38 product families. But before summer was out, speculation had shifted to when IBM would introduce its Micro 370 or Intel Corp. 80386-based multiuser systems. It may be that those systems will be aimed at the same markets served by IBM's current minicomputer line.

The world of change is spinning too fast for some of these people, but it is
*See **LOOKING** page 40*

Connolly is Computerworld's senior editor, systems & peripherals.

LAN demand to reposition small systems, study says

By David Bright

Increasing user demand for local-area networks (LAN) will soon force vendors of departmental systems to reposition those machines as file servers, predicts a recent study.

This trend should lead to the repositioning of Digital Equipment Corp.'s Microvax II and IBM's System/38, among other systems, and a shakeout among both systems vendors and independent LAN vendors, according to a study by The Sierra Group, an industry research and consulting firm in Tempe, Ariz.

"This demand by users for local networking is bad news for vendors pushing nonintelligent, terminal-oriented departmental processing systems," says Marty Gruhn, vice-president of The Sierra Group.

The shift will become evident in 1987, when primary systems suppliers like DEC, Wang Laboratories, Inc., Data General Corp. and, to a lesser extent, IBM, put heavier emphasis on intelligent workstations rather than on dumb terminals, Gruhn says. According to Gruhn, the serv-

ers will often function as hosts for specific applications, such as data base management or personnel records. Through the distribution of resources, this trend will simultaneously give more power to the users and make the departmental systems operate more efficiently, thereby enabling them to support more users.

While DEC is a strong proponent of networking, the minicomputer giant will not reposition its Microvax II as a network server, a spokesman says. Further, DEC's commitment to networking is evidenced by the recent introduction of its Vaxmate workstation with built-in Ethernet networking capability, the spokesman points out [CW, Sept. 8]. Such a product can link directly to a network.

However, IBM in part supports The Sierra Group's predictions. "The System/36 and System/38 both have the objective of being used as both stand-alone systems or as intermediate/departmental systems serving personal computers, as well as providing access to 370s," an IBM spokeswoman says. "Our customers have told us
*See **LAN** page 41*

Cray gives supers enhanced storage, cuts SSD prices

By Donna Raimondi

MINNEAPOLIS — Cray Research, Inc. has announced two solid-state storage device (SSD) models for the Cray X-MP series of supercomputers and price reductions for existing models of the SSD product.

"A number of our customers had saturated the capacity of the SSDs that they had, so we came out with bigger ones," a Cray spokesman said. The larger devices would be particularly beneficial to users performing three-dimensional seismic simulations, fluid flow modeling codes such as those for aerodynamic or hydrodynamic modeling, or a complete radar cross section, electromagnetic phenomena simulation.
*See **CRAY** page 41*

Controller ups Sequent storage

By James Connolly

PORTLAND, Ore. — Sequent Computer Systems, Inc. has enhanced the storage subsystems used with its Balance family of parallel processors by adding a new controller and more compact disk drives.

The Dual-Channel Disk Controller (DCC) is available for use with the 396M-byte Fujitsu, Ltd. Eagle drives that were previously offered by Sequent and with the new 8-in. drives, which have a capacity of 264M bytes. Sequent officials said the subsystem will allow parallel data transfers, denser storage packaging and reduced bus contention. Four DCCs reportedly will support 32 disk drives.

The DCC was designed to support the high transaction rates needed in using parallel systems, according to Balance sys-
*See **CONTROLLER** page 41*

Convergent adds page design, graphics tool to word processor

Users get customized publishing features on original Ngen system

By Peggy Watt

SAN JOSE, Calif. — Convergent Technologies, Inc. has joined the electronic publishing frenzy with the introduction of enhancements to its Ngen system, adding page design capabilities and a high-resolution monitor.

The Office Publishing System will be available strictly through OEM channels, said Ann Pickens, office automation software product marketing manager. Its Document Designer software is designed as an enhancement for the original word processing program released in June 1985. The new program adds page design capabilities to the word processing program and can be customized for specific applications or industries.

The suggested package price is $7,000. The system is scheduled to be available in October.

"We see office publishing as an additional function rather than the dedicated task that would require special equipment," said Eugene Lucier, Convergent marketing manager for

workstation devices and peripherals.

The Document Designer runs on Convergent's Ngen Series 286i, which is based on a 16-bit Intel Corp. 80286 microprocessor operating at 8 MHz under the CTOS II multitasking, multiuser operating system. It can be part of a cluster in any other Ngen system, Pickens said.
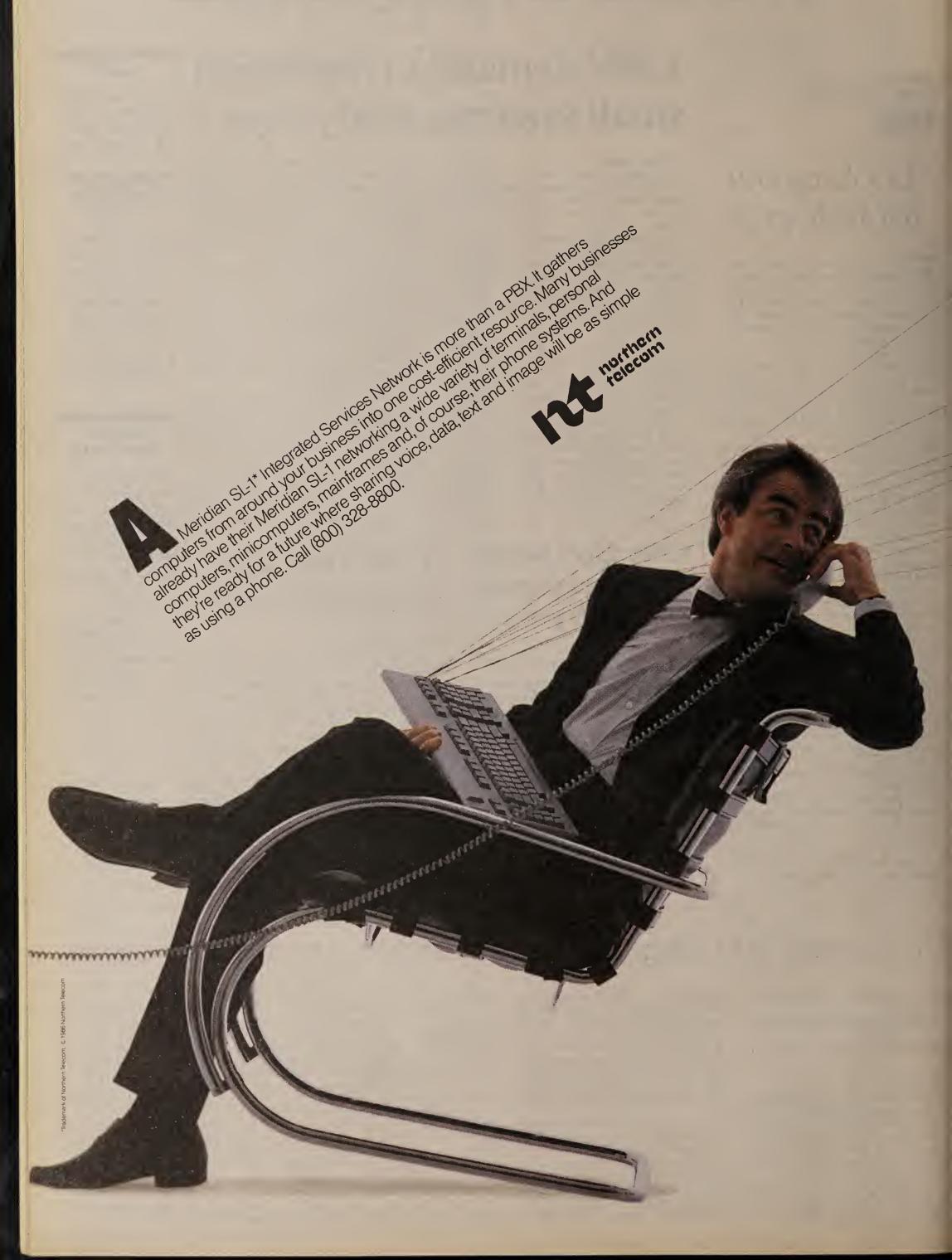
The software allows users to create text with multiple fonts displayed on the screen by using other Convergent products such as the Art Designer and Chart designer graphics programs, Extended Multiplan spreadsheet, electronic mail, data base and voice transcription features all in a single document, according to
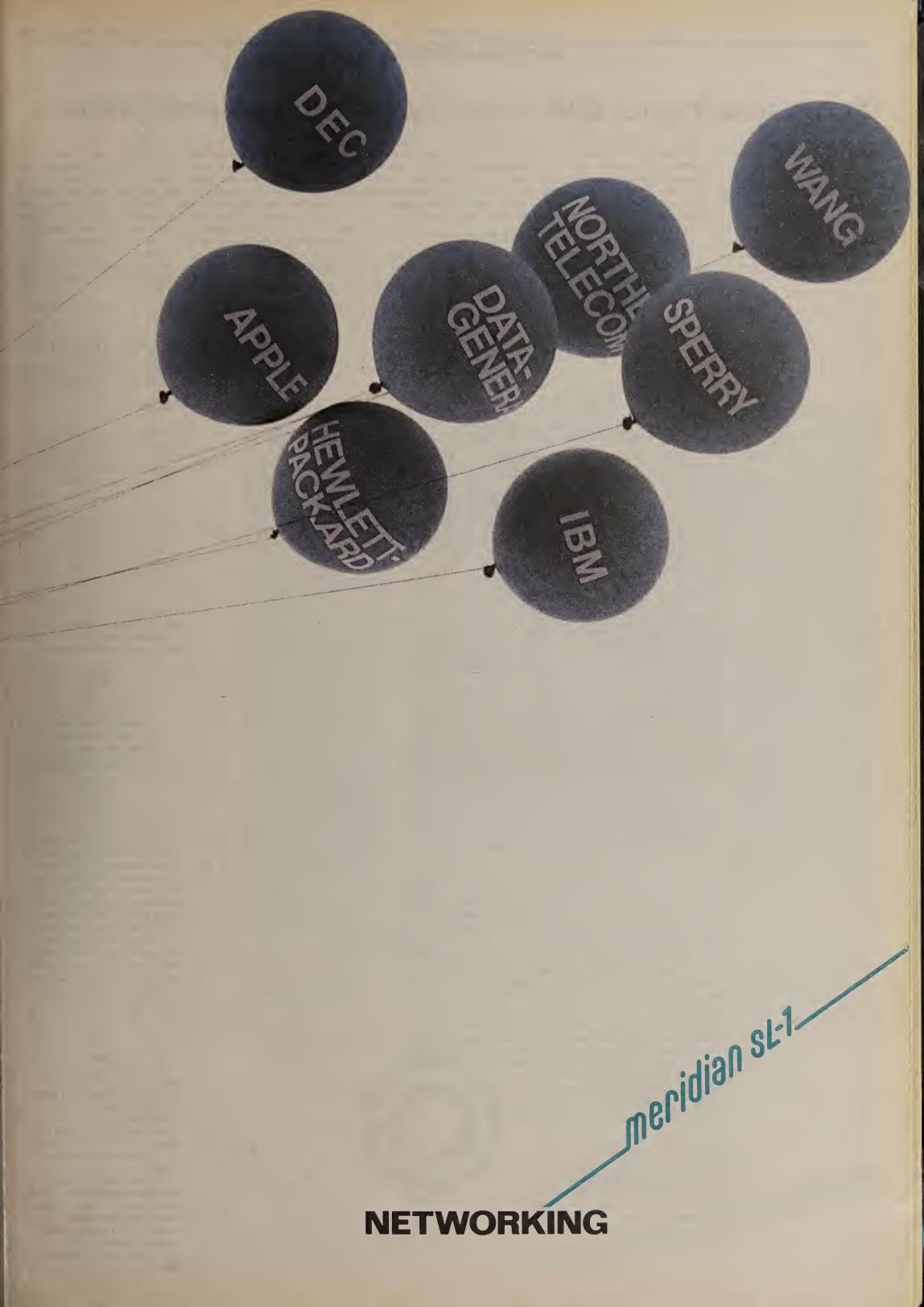
Convergent's Pickens.

The GC-003 high-resolution graphics controller and 15-in. VM-003 monitor enables documents to be displayed in the what-you-see-is-what-you-get format that is desirable to page design and desktop publishing applications, Pickens said. The monitor's resolution is 1024 by 768 pixels.

The package is not intended for use as a dedicated publishing system but allows publishing features to join other office tasks, Lucier noted.

He said interest has been expressed by developers of dedicated systems for court reporting, accounting and sales management.

DEC
WANG
NORTHERN TELECOM
DATA GENERAL
SPERRY
APPLE
HEWLETT-PACKARD
IBM

meridian SL-1

NETWORKING

SYSTEMS & PERIPHERALS

Xerox quadruples disk capacity on large-volume printers

By James Connolly

ROCHESTER, N.Y. — Building on the technology of its existing 9700 and 8700 laser printing systems, Xerox Corp. recently introduced two printers featuring up to four times the disk capacity and more than twice the processing power of the earlier systems.

The printers are known as the Xerox 9790 and 8790. A Xerox spokesman said the systems are intended for use in large DP centers, service bureaus and in-house publishing departments. The 9790 prints merged text and graphics at the same speed, 120 page/min, as the 9700, while the 8790 is rated at 70 page/min, which is the same speed as the 8700.

Xerox officials said the expanded disk storage for user forms, fonts and graphics is 100M bytes on two disks with the flexibility to upgrade to 200M bytes.

Increased memory

The printers also feature a control module capable of processing print instructions 2½ times faster than the earlier module, increased forms and control memory capacities and a 100 in./sec. tape drive for off-line operation.
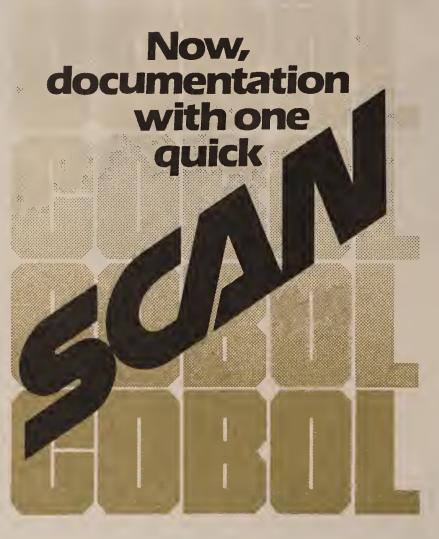
The 9790 was designed for a typical monthly output of 800,000 to 1.5 million sheets. The 8790 was designed for a typical monthly output of 400,000 to 800,000 sheets.

Anshoo Gupta, vice-president of marketing for Xerox Printing Systems, said, "The 9790 and 8790 integrate multiple font and graphics capabilities and are ideally suited to meet the growing output demands and tight turnaround schedules facing data processing centers today."

Prices for typical on-line systems start at $416,035 for the 9790 and $208,035 for the 8790.

Looking out for little guys

not because they aren't smart enough or don't try hard enough. Product cycles are speeding up to a point where the first 80386-based products are just being announced and people are already talking about 80486-based systems.

The lone wolves don't have the power to demand statements of direction from their vendors. They don't have the hundreds of minicomputers and dozens of mainframes that lead to confidential briefings, and they can't afford expensive re-

> **The lone wolves don't have the power to demand statements of direction from their vendors.**

search services.

Their information pipelines consist of the press, their peers and local sales representatives, who themselves are often kept in the dark about product directions until the last minute.

A consultant who has a half dozen clients running Microvax IIs needs to know when or if a Microvax III is coming and what it can do.

These consultants and small-shop DP managers must assert themselves and demand to be kept informed. But the vendors, particularly those that are as powerful as IBM and DEC, carry their own burden, and that is to be more open about their product directions.

Such an openness would minimize the confusing rumormongering in the press and professional organizations.

If nothing else, greater openness would allow a busy manager to make safe plans more than a couple of months in advance. Those managers and small-time consultants must demand that openness.

SYSTEMS & PERIPHERALS

Cray enhances storage capacity

The SSD functions similarly to conventional disk storage, but has speed advantages because of its use of very fast MOS chip technology and high-speed channels. This is said to allow for memory-to-memory aggregate transfer rates of up to 2G byte/sec. between the SSD and the X-MP mainframe.

The new models offer the potential for significant performance improvement on I/O-bound applications, Cray said.

The new SSD models have two and four times the storage capacity of the largest model previously available.

The top-end, $6 million model has 512 million 64-bit words in random-access MOS memory. It can hold sufficient data to run four concurrent NASA Structural Analysis executions on a four-processor X-MP, Cray said.

A $4 million model has 256 million words of memory. Both are available immediately.

Cray has reduced prices on the 128 million-word SSD from $4 to $3 million and reduced the 64 million-word model from $3 to $2 million. The price of a 32 million-word model, housed within the Cray Research I/O Subsystem cabinet, remains unchanged at $750,000.

According to Cray, the reductions were made possible by decreases in manufacturing costs and in the costs of MOS chip components and production.

Controller ups Sequent storage

tems product manager Joanne Kahn. "Parallel computers, such as the Balance family, have raised the performance levels reached by mid-priced computers and this has created a demand for increased I/O throughput to match," Kahn said.

Kahn said Sequent is offering the DCC in conjunction with an effort to target transaction processing applications in the banking, insurance and brokerage industries and data base applications in telecommunications, engineering and manufacturing.

The DCC reportedly drives up to eight disks on two independent 24M bit/sec. channels, with each channel supporting overlapped seeks on all eight drives concurrently. Sequent said the channels can simultaneously transfer data at the full transfer rate from two different disks. Double command buffers in the system software reportedly allow two disk requests to be active in each drive so performance can be improved with back-to-back reads and writes.

Sequent also said that the new drives have a formatted capacity of 264M bytes and a 330M-byte unformatted capacity.

The subsystem will be available for the Balance 21000 this month and for the Balance 8000 in November. A 544M-byte subsystem with the DCC and two 264M-byte drives costs $28,200. A subsystem with a 396M-byte drive and the DCC costs $20,900.

LAN demand to redirect systems

that PC affinity is very important to them, and both systems have excellent support in that area already available or becoming available later in 1986," the spokeswoman notes in reference to the June 16 announcement of enhanced operating systems for the System/36 and 38.

Because the major systems vendors are beginning to offer their own networks and are integrating personal computers within their own product lines, "there's no opportunities for those [LAN] vendors in the major accounts anymore," Gruhn says. "If I'm going to buy very large systems, I'm going to want as few vendors as possible accountable. Their piece of the very, very large Fortune 1,000 market will be substantially diminished, which leaves them the midrange companies. Since companies like IBM, DEC and DG are really pushing at value-added resellers that serve the middle ground, that squeezes the independent LAN suppliers out even further."

Many of the workstations in the server environments will be "media-less" personal computers, Gruhn and others predict. For security and data management reasons, the PCs will not be equipped with floppy disk drives. Instead, they will have very large memories and either a hard disk drive or no storage device at all.

One LAN vendor agrees that PCs without floppy disks will soon become popular but disagrees that trouble lies ahead for the independent LAN vendors. Raymond Noorda, chairman of Novell, Inc., says the technology exists for producing a $600 diskless PC terminal that includes a network card but that the market has not yet forced the issue. As for systems vendors competition, Noorda predicts "a merging of technologies that will allow them all [systems and LAN vendors] to coexist."

Systems vendor Plexus Computers, Inc. is already preparing for the expected shift. It is building a file server for mid-1987 introduction, Marketing Vice-President Kip Myers claims. But in his opinion, diskless PCs should not become that popular, because they could slow down the central systems. In addition, he says, users like to have their own disks.

MICROCOMPUTERS

MICRO BITS
William Zachmann

Cranking up older PCs

The open architecture of the IBM Personal Computer family has been key to its success. The widespread availability of third-party hardware and software led to strong competition as vendors vied with IBM and each other to offer enhanced capabilities, lower costs or both. The result has been enhanced value to users of IBM Personal Computers and the growing number of compatible competitors.

However, another benefit the IBM PC family's open architecture provides to users is the ability to continue to take advantage of improved technology while preserving the value of investment in older micros. Add-on hard disks, enhanced graphics ability, compatible graphics boards and monitors, improved printers and expanded memory boards all offer ways to upgrade the capabilities of older personal computers.

These and other options have long been available from well-known sources. Until recently, however, namebrand "turbo" boards for increasing the basic processing speed of the Intel Corp. 8088-based IBM Personal Computer and Personal Computer XT models have not been available. Users have had to rely on lesser known vendors for PC and XT performance enhancement.

The new Mach 10 Performance Enhancement Board from Microsoft Corp. changes all that, however. Now, users have an economical way to obtain high-speed performance from older systems while still having the assurance of dealing with the vendor that wrote the personal computer operating system for IBM.

The Microsoft Mach 10 is an add-on board that contains a 9.54-MHz Intel 8086 processor, cache memory, a Microsoft Inport connector for a mouse

Zachmann is vice-president of research at International Data Corp.

Desqview gets utilities

Packages to boost ability of multiwindowing system

By Peggy Watt

SANTA MONICA, Calif. — Quarterdeck Office Systems, Inc. has announced a package of four utility programs that run under Desqview, its multiple-window operating environment that is compatible with IBM's Topview.

Desqview Companions 1, the first of a Quarterdeck-produced line of Desqview-specific applications, includes a date book, calculator, notepad and Desqview Link, a communications program. They will be available in October as a package, according to Quarterdeck.

The applications "can't run outside of the Desqview [or Topview] environment," Quarterdeck President Therese Myers said. "They take advantage of the environments," including the multiwindow, multitasking aspects, she said.

The programs are not random-access memory (RAM) resident but run in the Desqview background and are swapped in or out of windows as needed, she said. Each package runs separately, and none takes more than 50K bytes of RAM when active.

'Indispensable' package

"For me, the communications package became indispensable," Myers said. She runs it on a laptop when traveling and calls her office computer to send or retrieve files, calendar information or messages, she said.

The Companions package is priced at $99.95 but is available to registered Desqview users for $75.

Also, subscribers to Quarterdeck's Priority Service contract, which costs $30 yearly, can get the Companions for $55.

The Priority Service option, launched at the request of corporate customers but available to individuals as well, ensures first priority in technical assistance calls, access to a Quarterdeck electronic bulletin board system, some free consulting and discounts for products and upgrades, according to Quarterdeck.

Page-layout debuts show loyalists still supportive of Apple graphics

By Peggy Watt

SAN FRANCISCO — Though somewhat eclipsed by the arrival of desktop publishing systems for the IBM Personal Computer and compatibles, Apple Computer, Inc.'s Macintosh gleaned its share of support in a showcase of publishing products. Major Macintosh offerings announced at the recent Seybold Conference on Desktop Publishing included a few new page-layout programs and upgrades, as well as accessories such as drawing packages and large, high-resolution monitors.

Desktop publishers are not simply brushing aside the system that popularized the task just because the PC is starting to offer an alternative.

"Apple designed the Macintosh from the beginning to be graphics oriented," an attribute of the page design systems of desktop publishing, said William Gates, chairman of Microsoft Corp. and a speaker at the Seybold conference. His Windows graphics operating environment, however, brings some of that interface and protection from the operating system to IBM PC and compatible systems.

"An MS-DOS bias is not very objective," said James Kalin, a consultant with Microcomputer Publishing Group in New York. "You can do things more simply and more cheaply with Mac equipment."

Even Aldus Corp., which helped blaze the desktop publishing trail with its Pagemaker design program for the Macintosh, recently joined the second wave with a PC version. But Aldus also announced an upgrade to Pagemaker for the Macintosh, and Michael Solomon, vice-president of sales and marketing, said he expects to create new markets rather than steal from PageMaker sales.

Before, people would only look at the solution if they were willing to look at Apple," Solomon said. "I believe desktop publishing is going to grow exponentially. Apple is going to have a smaller percentage of a bigger pie."

Also showing new versions of their page design programs for Macintosh computers were Manhattan Graphics Corp.

MICROCOMPUTERS

Cranking up older PCs

or other pointing device and custom circuitry aimed at optimizing performance for screen refresh and disk I/O. The result is performance two or more times that of a standard IBM PC or XT.

Microsoft's primary motivation for the Mach 10 was to provide users an inexpensive way to obtain satisfactory performance with Windows on an 8088-based system. Windows requires something faster than the 4.77-MHz 8088 used in the IBM PC and XT. The Mach 10 board provides the extra horsepower.

But Mach 10 is much more than just a way to run Windows. The combination of the fast 8086 processor with on-board cache memory results in signficantly improved performance for nearly any personal computer software application.

What's more, because of a very well-thought-out design, the 8086-based Mach 10 offers performance as good as or better than the majority of the more expensive Intel 80286-based turbo boards from lesser known vendors. By taking advantage of a fast clock speed on the 8086, some custom circuitry and cache memory, Mach 10's designers obtained maximum performance while keeping the cost low.

Installation of the Mach 10 is a bit more complex than just adding a new board, but not beyond the capabilities of a reasonably sophisticated user. The board plugs into a standard long expansion slot. An additional ribbon connector from the top of the board goes to a connector that plugs into the 8088 microprocessor slot on the system board.

So, to install the Mach 10, it is necessary to first remove the 8088 microprocessor and, if present, the 8087 coprocessor. Three jumper blocks on the Mach 10 must be set to indicate which mouse interrupt (if any) is to be used, whether cache memory operations should be enabled in the BIOS and Basic and whether an 8087 math coprocessor is installed on the Mach 10.

None of this is terribly difficult, although it is a bit more complex than a normal board installation. A well-written and clear manual with good illustrations helps. Still, if you are easily intimidated by hardware installation, you might want to get assistance from someone more technically inclined.

The Mach 10 is certainly worth the effort, however. My old PC now cranks along at 2½ times its previous performance, according to Peter Norton's SYSINFO utility program. (Even with the slow speed setting on the Mach 10, it clocks 1.7 times the PC performance, presumably because of the cache memory alone.) With that, I think I'll hold off buying a 286-based Personal Computer AT-compatible system for a good while longer. Maybe I'll wait for a 386-based system after all.

The Mach 10 comes packaged with a slick new Microsoft Inport mouse, Microsoft Windows and the remote speed switch at a suggested list price of only $549. It's well worth that in my book.

Loyalists support Apple

with Ready, Set, Go, and Boston Software Publishers, Inc., whose Macpublisher II is now called Letrapage and marketed by Letraset USA.

Ready, Set, Go is priced at $295; Pagemaker is still available for $695; and Letrapage will be priced at less than $600 upon its release in November, according to Letraset officials.

New competition in page design programs for the Macintosh includes Ragtime, a $395 page design system with built-in word processing and a spreadsheet. It will be available this month from Orange Micro, Inc. of Anaheim, Calif.

Scanner systems

Several scanner systems were also introduced. Abaton Technology Corp., based in Pleasanton, Calif., announced its $2,495 C-Scan Macintosh, which allows halftone photographic images to be entered into graphics and drawing programs for output on Postscript printers.

Mountain View, Calif.-based Datacopy Corp.'s Jetreader and Model 730 scanners can also now produce high-resolution images for use in Macintosh graphics programs and 300 dot/in. output.

The Jetreader costs $2,250, and the Model 730 costs $3,250, including the Macintosh interface.

Three companies showed large, high-resolution monitors for Macintosh systems. Radius, Inc. of Sunnyvale, Calif., introduced its Full Page Display, a 15-in. monitor for $1,995. Big Picture, a 17-in. display, is available from E-Machines, Inc. of Tualatin, Ore., for $1,995. Megascreen, a 20-in. monitor, sells for $2,995 from Micrographic Images of Canoga Park, Calif.

MICROCOMPUTERS

Outline processor includes More presentation graphics

By Peggy Watt

MOUNTAIN VIEW, Calif. — Users of Living Videotext, Inc.'s outline processor Thinktank are going for More, a product that adds presentation graphics capabilities to the firm's popular outline processor.

Several Thinktank users said they like the product not only for its outline processing capability but also for its added graphics features. Users can now convert outlined data into tables, graphs and charts of presentation graphics.

More's detailed outline functions were a plus for Bill Ryan, a distributor for Beatrice Foods Co. products in Belmont, Calif., who used the original Thinktank that ran on the 128K-byte Apple Computer, Inc. Macintosh. Ryan uses Thinktank as a multilayered data base that can print out by level as needed.

"It's like a massive file drawer that I can throw everything in" and dig through in an orderly manner, he said. He even uses it for automatic telephone dialing, since More can recognize an entry's numerical characters. Ryan has converted many of his files to More's format to expand his outline data base and take advantage of the automatic time stamp, cross-referencing and search commands.

No copy protection

More runs only on a Macintosh with 512K bytes of random-access memory or a Macintosh Plus with an external disk drive or hard disk. The product is not copy protected, according to Living Videotext. Its retail price is $295. Network versions are available for a $900 unlimited license.

Volume purchase prices are also available, with corporate sales available directly from the developer under negotiable volume order agreements, according to Deborah Todd-Curry, director of major markets for Living Videotext. With a minimum purchase of 17 copies, the purchase price is cut in half to $2,500, Todd-Curry said.

One of the first volume purchasers was Robert Soudant, strategic planning director for Nynex Corp. in New York. He ordered 17 copies after beta testing More; the company already has 200 copies of Thinktank.

"I like it because I do a lot of dictation, and More will do the same thing. The graphics just add onto that," Soudant said.

The outline processing portion of More expands Thinktank's features to include more detailed breakdowns of outlines, cloning capabilities to link cross-references throughout the document and more sophisticated search-and-gather commands for faster reorganization, according to Living Videotext's Todd-Curry. More also allows text and graphics windows within outlines, concurrent display of as many as six different outlines and additional header and footer options.

The new program includes 32 installable outline templates for standard formats. The user can also create individual templates and save the formats for future use, she said.

The program uses the Macintosh interface but offers an option of tiled or overlapping windows and supports both a mouse and keyboard. Outlines can be exported to Apple's Macwrite and Macdraw, Lotus Development Corp.'s Excel and Jazz, Microsoft Corp.'s Microsoft Word and standard ASCII files. It also supports color output on the Imagewriter II.

Through Sept. 30, registered owners of Thinktank can receive a $50 rebate with the purchase of More by sending Living Videotext the proof of purchase described in each package. Prospective buyers can obtain a $10 rebate coupon until Dec. 31 by contacting the company.

MS-DOS training tool out

By Maura McEnaney

REDMOND, Wash. — Hoping to leverage support for its existing applications and work off the sales of its MS-DOS operating system, Microsoft Corp. recently introduced a computer-based training (CBT) program for MS-DOS.
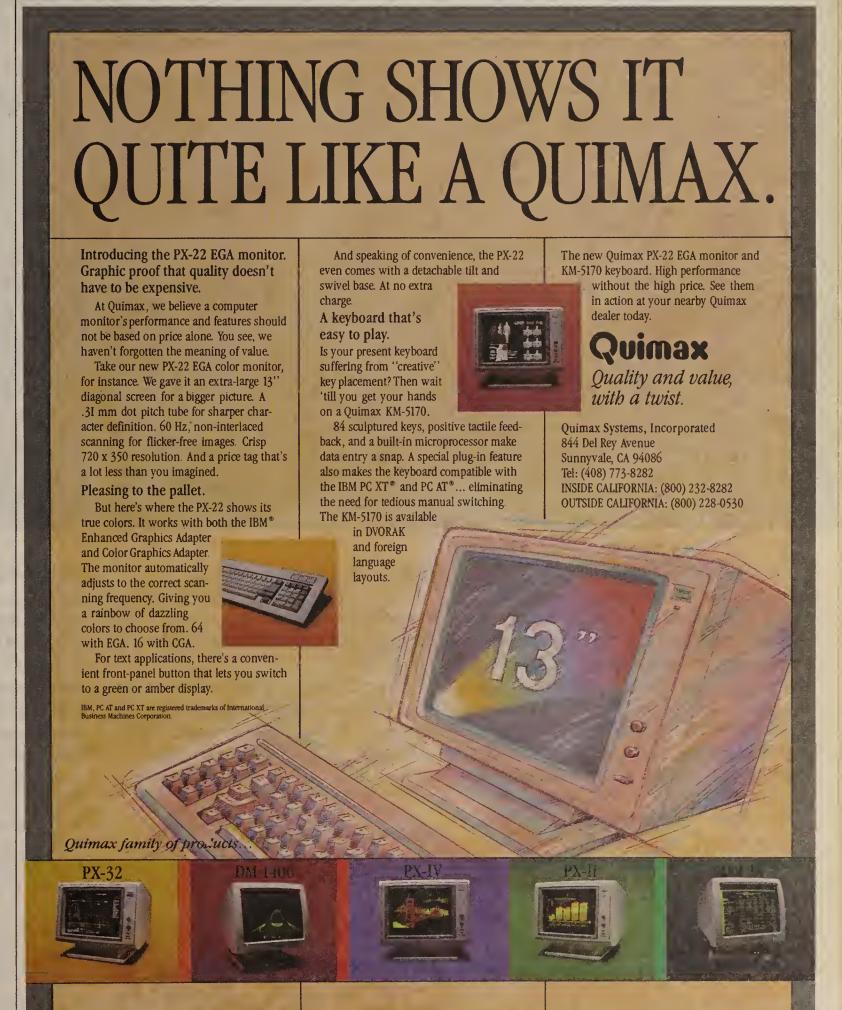
Called Learning DOS, the $49.95 interactive program is aimed at users of both floppy- and hard-disk storage systems on IBM Personal Computers and compatible machines. The product is Microsoft's third major CBT product, following training programs for its Microsoft Word and Project software.

Learning DOS consists of 24 lessons for users with hard disk drives and 17 lessons for floppy disk users. The lessons are aimed at novice and intermediate users, according to Susan Boeschen, Microsoft's director of user education.

Users can tailor the Learning DOS lesson via menu selection. When users make a mistake in the program, Learning DOS tells them what they did wrong and suggests how they can correct the mistake, Microsoft claims.

The program also includes a Quick Reference disk, which can cross-reference the relevant CBT lesson and the associated entries available in the DOS quick reference. Learning DOS is available through software dealers or directly from Microsoft.

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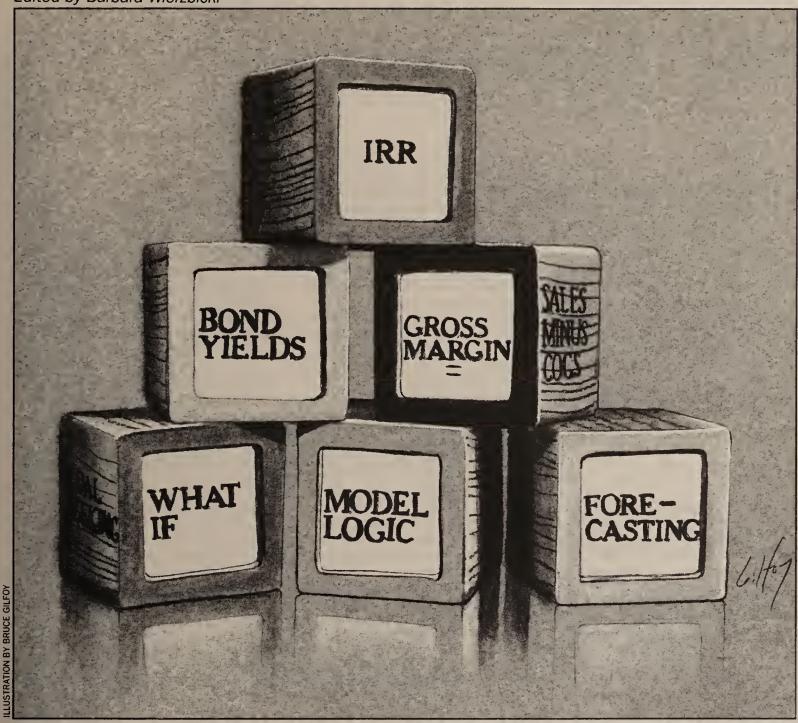
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Product Spotlight

Edited by Barbara Wierzbicki

ILLUSTRATION BY BRUCE GILFOY

PC modeling programs
New micro tools outdistance spreadsheets

By SHAWN BRYAN

As DP use of undocumented spreadsheets mushrooms and as the management decisions made from them become more important, the opportunity for critical errors multiplies.

The virtue of spreadsheets — that users can quickly and easily move about them making changes and then copy the changes into other cells — makes documenting them devilishly difficult. The data and the logic are homogenized so well that separating the two becomes nearly impossible.

If I build a spreadsheet for you to use, you would be hard-pressed to sort out why and how it works. Users cannot see the logic behind the sheet, only the results of the calculations as they are displayed. A single calculation error — a cell copied one too many times, for example — often leads to false results. Spreadsheets have become an MIS manager's nightmare.

Enter financial modelers: a class of programs

Bryan is chief financial officer of Cabot Cooperative, a dairy manufacturing company in Cabot, Vt. He is also president of Datatek, Inc., a consulting firm specializing in small computer systems design and implementation.

designed to rectify some of these spreadsheet problems. A modeling program, in the broadest sense, is any program that allows a user to simulate real events or to test hypothetical situations on a computer. Spreadsheets can be used as modeling programs, as can a broad range of other generic programs. However, since the newer financial planners specialize in creating models, they generally document model logic more lucidly than spreadsheets.

The following characteristics further set modeling programs apart from generic financial planners:

- Built-in programming languages.
- Flexible data view and report capability.
- Complete separation of data and logic.
- Easy path to consolidation.

Modeling programs usually have their own programming languages. It may be either a fully developed procedural or nonprocedural language or simply a collection of modeling techniques such as sensitivity analysis, goal seeking, multiple regression and so on. The language has one distinctive feature, though: It was designed to make the evaluation of events over time less complex. Time series analysis — a series of numbers that represent values for a variable at different points in

PC modeling programs offer most of the power and few of the constraints at a fraction of the cost of their mainframe cousins.

Micro tools outdistance spreadsheets

time — is integral to almost all business models or simulations. Most modeling programs have a wealth of time series functions or commands that simplify conversions from one time series to another.

Business modeling programs also offer considerably more flexible approaches to viewing and reporting data. Whereas spreadsheets are printed from top to bottom, left to right, modeling programs permit selective viewing and printing of values. A user can choose to work with subsets of the model, such as selected rows and columns in any order, without losing the relationships between variables.

The most telling difference between spreadsheets and modeling programs lies in the area of data manipulation. Spreadsheets force the user to work with all the data all the time. Modeling programs separate data and logic. Normally, models are expressed as variables in English-like statements. The same logic in a spreadsheet is referred to as cells, that is, A1 - B1 = C1. In a modeling program, the variable "Sales" can have multiple data sets, since the variable has no value permanently associated with it. In a spreadsheet, however, the values represented by the cell locations are tied directly to that location. The cells cannot function as variables, but merely as containers.

For example, a typical small model logic file could look something like this:

Sales = GROW(1000 @ Jan 86,.05)

Cost of Goods Sold = Sales * .36

Gross Margin = Sales - Cost of Goods Sold

General & Administrative = GROW(150 @ Jan 86,.02)

Marketing = Sales * .04

Profit = Gross Margin - SUM(General & Administrative + Marketing)

When comparing this logic with similar spreadsheet logic, it rapidly becomes apparent that modeling programs offer a much more understandable picture of what is happening. The cell designations found in a spreadsheet say nothing about the reasonableness of the model, while the modeling program actually gives an understandable description of what is happening.

For example, with very little effort one can figure out that sales are expected to start out at $1,000 in January 1986 and grow by 5% each month thereafter. The GROW function is just one of many functions in modeling programs that make it easy to project into the future. By contrast, a spreadsheet would copy a formula, multiplying the previous cell by 1.05 into the range the user wished to predict. If the user changed a growth rate, he would have to remember to change each cell individually. In the modeling program he makes just one change, to the growth rate. The change is automatically extended into the future.

A modeling program allows the user to build multiple data sets with a single model logic file. The point is that modeling programs can handle much more extensive models because they store data and formulas separately. This feature cannot be overemphasized, since it is key to the advantages modeling programs offer over spreadsheets.

Because models use text as variables, model logic is much more understandable. A modeling program can be seen as a narrative explanation of the course of events. The narrative explanation is the logic. In spreadsheets the user is faced with a cryptographic analysis of references to cell locations. Debugging spreadsheets is an exercise in figuring out what cell locations represent. Debugging models is simply a matter of reading statements to see if the information is correct.

Further, models offer an easier path to consolidation. In models, the variable name drives all additions and subtractions. The models do not have to be in the same order or even the same size. The variables will determine what data is affected. To add the East and West sales figures together, the user simply tells the program to add East and West Sales. He can add multiple data sets to examine the bottom line or view individual segments of the whole.

Spreadsheets, on the other hand, require some pre-

cise manipulations to successfully consolidate data. Cells must align exactly. When adding data to a spreadsheet, there is no way of being sure the values get into the right spots. Spreadsheets also are much more demanding when it comes to consolidating data from several subsets.

Although spreadsheets offer considerable advantages, the decision to move from spreadsheets to modeling programs is not an easy one, and it is not without cost. First, resistance to changing from familiar and intuitive spreadsheet modeling will be strong. Users who have not taken the time to master the spreadsheet will not take kindly to having to learn a new program.

Spreadsheets encourage experimentation on the fly, an advantage over models. It is easy to jump over a column or down a row and add an experimental equation to see what happens. Such experimentation, however, is a double-edged sword. Each new calculation brings with it the risk of error as undocumented change is heaped upon undocumented change.

Models do not allow such undocumented changes. Instead, the user must type in the relationships, define the variables, add the data and recalculate to arrive at a new idea. This necessarily ordered process may at first stifle creative growth and will certainly incur the wrath of users accustomed to jumping about a spreadsheet. The process is time-consuming and requires forethought. No one likes to be forced to slow down, especially when the daily pressure is to do more with less.

> **Users can be led astray by naive use of techniques that predict future events through cause-and-effect relationships. If the user's understanding of the data is flawed, the program's forecast can lead to flawed conclusions.**

There is also the issue of ease of use. Sophisticated built-in functions allow modeling programs to handle more complex calculations, such as loans with balloon payments, with fewer entries. The problem is that the user has to know how to use the added features. The wealth of features and the flexibility of modeling programs make them harder to learn to use well.

Many modeling programs also introduce statistical and forecasting elements not found in most spreadsheets. The unwary user can be quickly led astray by naive use of time series and regression analysis techniques that predict future events through cause-and-effect relationships. If the user's understanding of the data is flawed, the forecasting of events from historical patterns or supposedly connected events can lead to tragically flawed conclusions. This is less problematic in spreadsheet models, in which such sophisticated forecasting functions are not built in and must be constructed by the model builder before similar calculations can be attempted.

Models often take longer to construct in modeling programs than in spreadsheets. The model is made up of variables that must be typed into the computer and data that must then be entered into the model. Typing out a model takes time simply because each set of variables must be typed in, sometimes over and over again. Because modeling programs use English-like names for variables — like Gross Profit or Manufacturing Expenses — typing in the logic can be more a secretarial than an analytical task. Typing is not glamorous work, and most people would prefer to spend their time exploring the possibilities of a situation, not typing in line after line of logic. Spreadsheets eliminate this chore through the replication process.

If models are filled with so many problems, why trade up from spreadsheets? The same things that make models tougher for individuals to use make them better for large organizations to control. The models are self-documenting. The separation of data and logic means multiple data sets can use the same logic file. Consolidations with modeling programs are a snap. Logic files can be protected from tampering, ensuring the results will be calculated in accord with the boss's wishes. Finally, and of special importance, many modeling programs have both personal computer and

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Modeling makes sense when . . .

What are the signs that you should be thinking about modeling programs as a possible adjunct to spreadsheets?

The first and most obvious hint is the existence of huge spreadsheets that no one can decipher. When your middle managers start to clamor for 2M- and 4M-byte memory expansions because their spreadsheets no longer fit in 640K-byte machines, you may want to examine what is being accomplished with the monster models.

It is one thing to have a mailing list data base in a spreadsheet that has outgrown memory — and an entirely different matter if the company's future is being modeled with a huge undocumented spreadsheet. For your own financial well-being, you may want to suggest a modeling program for the financial analyst with monster sheets. The risk of errors creeping into his work will be remarkably reduced.

Another hint that models make sense is when you hear frustrated cries from people trying to combine several spreadsheets into a company model.

If your managers are having trouble getting the Eastern and Western regions consolidated into a company master model, you should look to a modeling program to bring structure and convenience to the company's regional reporting systems.

A further sign of spreadsheet failure is the existence of multiple spreadsheets, all remarkably alike.

When you find one of your managers with 25 or 30 spreadsheets labeled "Sales 1-30," you can be sure a modeling program would help by reducing the number of logic files to one or two.

This reduction will result in significant data storage savings, because data files take up much less room than complete spreadsheet models.

Multiple data sets can be maintained much more efficiently with models than spreadsheets, too. Data sets can be added to or subtracted from one another to view the variances between them.

Modeling programs also allow you to consolidate and explode your data with relative ease. You see as much or as little detail as necessary. Spreadsheets are an all-or-nothing proposition.

Mainframe modeling programs cry out for micro-based systems when time-sharing charges sink your budget or when the mainframe resources are so taxed that response times are turtle-like.

If you find yourself telling people, "Expect to get today's submitted model solutions sometime tomorrow," you should explore freeing up your host system with PC-based modelers.

— SHAWN BRYAN

mainframe versions, often with data transfer protocols built in.

This encourages users to off-load data from the company host system for examination and manipulation, freeing host resources and guaranteeing a common data base that is available to all users. It also speeds model building as mainframe resources are taxed and model solutions slow down. System charges for time-sharing will also be dramatically reduced.

If modeling programs are in order, the next step is choosing the right package for the job. The choice may be an easy one if the user has a mainframe program like Execucom Systems Corp.'s IFPS or Via Computer, Inc.'s Prophit.

PC versions of these programs are available and work enough like the mainframe versions to encourage use and to ease transitions back and forth. If the user a does not have a host system running a modeling program, he may have to do more homework.

Modeling programs break into two basic types, procedural and nonprocedural. A nonprocedural model can take logic statements in any order. The program seeks out the information it needs to solve a problem and can work backward or forward through a logic file looking for statements it needs to arrive at a solution. Good examples of this kind of program are Execucom Systems' IFPS/PC and Javelin Software Corp.'s Javelin.

Procedural programs work from front to back, and, unless directed to do so by the logic itself, they cannot move around a logic file looking for the correct statements. Good examples of this type of program are the Prophit and Microprophit programs from Via Computer and Ferox Microsystems, Inc.'s Encore. These programs solve problems in the order in which they are described to the system.

Nonprocedural programs are easier to use, because a user does not have to worry about the sequence of events in his logic. The user can add statements without regard to their logical location. Procedural logic files require attention to the order of events.

As a result, the logic files are generally quite easy to follow. Problems are presented one step at a time and solved that way. That means the user can easily trace program execution by following the logic from front to back.

The other key factor in deciding what to buy is the type of problems that must be solved. Anyone who wants to buy a modeling package for a financial operation will want to look for one that has the broadest possible range of financial functions, such as Encore.

On the other hand, if the applications are more statistically or forecasting oriented, a statistical modeling program like the Econometrics

Software Package (ESP) from Econica, Inc. may be a better purchase.

A good way to understand how modeling programs work is to study a few in action. Since we have defined several types of programs — procedural and nonprocedural, mainframe-based and stand-alone — we will look at one of each for comparison purposes.

IFPS/Personal from Execucom Systems is an example of a mainframe-based, nonprocedural modeling program. The mainframe version has been available for some time, and the PC version has been out for more than two years. The host and PC-based versions use almost identical languages, and a built-in communications system that automatically

converts host language conventions to PC conventions further enhances their data- and modeling-transfer capability. The reverse is also true, making data and model transfer transparent to the user.

Version 2.0 of IFPS/Personal takes advantage of the interactive environment of the PC. The program uses a spreadsheet-like view of the model, so the working environment is immediately familiar. The program's case analysis feature permits the addition of new variables as the model is viewed. It also allows stated variable values to be changed. As a result, playing "what-if" and goal-seeking games with IFPS/Personal is a pleasure.

A user can define a number of windows onto the model being used, letting him see both the data entry

area at the top of a model and the results area at the bottom. A menu bar at the bottom of the screen identifies available options and a very extensive Help system guides the user through problems.

A model is created by typing it into either the model editor in IFPS/Personal or in a word processor, provided it creates clean ASCII text files. The editor in IFPS/Personal has a number of features designed to assist in model building, but it may be simpler to use a word processor than to learn another editor. The model can be stated in any order. When it is compiled, the program will seek out variables in their proper order for solution.

IFPS/Personal also permits a user to design his own functions and then call them with a single name. A user

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Product Spotlight/PC Modeling Software

can build depreciation tables, for example, and then enter them into the model by calling them the same way a function would be called. This facilitates the program's building-block approach to model building.

Logic files can be transferred from the mainframe to a PC, an option that means that the effort expended on creating mainframe logic models will not be lost when deciding to move to a PC. The file transfer process is built in, and the communications program performs the minor amount of translation required to make a mainframe model run on a PC without any user intervention.

The program's test case mode allows users to pull a variable out of the model and tinker with it, changing the expression or data it uses, and then resolve the model to see the

> **IFPS/Personal has a goal-seeking function that allows users to backsolve problems. By specifying what is necessary for a profit, the program will adjust sales to get the required bottom line.**

impact on the results. The case does not become a permanent change to the model unless specified.

IFPS/Personal also features a goal-seeking function that allows users to specify an objective and a variable to change in order to meet the objective. The result is a back-solving of the model. For example, users can specify what is necessary for a profit and tell IFPS/Personal to

adjust sales to get to the required bottom line.

IFPS/Personal comes with a full complement of business functions. It further allows users to define their own function, should the one they need not exist. A good example of a user-defined function might be one that automatically calculates the correct FICA deduction for an employee and that shuts off the deduc-

tion when the limit is reached. Another example is the Accelerated Cost Recovery System (ACRS) depreciation tables, which change constantly. An ACRS function would take the specified life of an asset and depreciate it according to the appropriate table.

While this product has somewhat limited import/export capabilities, Clarity Software Corp. has developed a program called 3-2-1 Go, which translates Lotus Development Corp. 1-2-3 models into IFPS/Personal models, logic and data. This greatly enhances the desirability of this program for conversions in which a large number of spreadsheets are to be brought into the PC. The logic and data will not have to be retyped.

Again, a great deal of time and effort can be saved by moving models from a spreadsheet to a modeling program. While perfect translations seldom occur, I was able to achieve about a 90% translation. The rest of the spreadsheet material did not translate well and had to be modified, but the modification consisted of removing comment lines and adjusting a few logic statements, a much less demanding chore than retyping all the logic and data from the spreadsheet.

IFPS/Personal does not have a particularly useful graphics module built in, but Execucom offers an add-on graphics package. The company also offers Sidelight, a program that supports output to most graphics devices and supports import/export of a number of file types, such as Lotus programs, IBM's Data Interchange Format, Microsoft Corp.'s Sylk, ASCII and so on. This support of IFPS/Personal means that — with the expenditure of additional funds for the add-ons — a full-featured program is available for all modeling needs.

The major drawback of IFPS/Personal is the copy protection scheme, which requires a key disk each time to start the program. In these days of mandatory hard disks, copy protection is a flaw that cannot be ignored. Other than that one negative aspect, IFPS/Personal is a good program with excellent support. It has a plethora of features and works extremely well with its host system cousin, making the product an especially good choice for the person already using the mainframe version.

Encore, a stand-alone procedural language product from Ferox Microsystems, stands head and shoulders above the rest of the programs in its category. It is an appropriate development tool for developing modeling applications for a large company. Encore has an rich list of features. It will swap data with the popular 1-2-3 spreadsheet from Lotus and can also handle data transfers from a host system, provided the data conforms to Encore parameters.

Encore consists of a text editor, a compiler, a spreadsheet and an executive control system. Two control languages are used for model building: one for controlling reports and the other for controlling program flow. The report language allows completely flexible report design, including presentation graphics. The control language allows users to build systems that are self-contained and keeps uninformed users from straying into areas in which they can do harm. Models can be constructed with full-page Help screens and

menus that lead the user from one step to the next.

Encore looks less like a spreadsheet than does IFPS/Personal. It has a spreadsheet mode, but it does not have windows, and the model logic cannot be adjusted from the sheet. The spreadsheet does have some nice features, like a highlight and blinking mode used to emphasize cells that have changed more than some predetermined amount. The spreadsheet also has a goal-seeking mode that allows users to backsolve problems.

The real work in Encore is done in the creation of models that can be used repeatedly by novice and expert alike. The process for building a model starts with the editor, where logic statements are entered in fairly easy-to-understand statements like " 'Total Sales' = 'East Sales' SUM 'South Sales.' " After creating the model using the model editor, a user can then play with data in the spreadsheet to his heart's content.

Ferox offers several development tools to assist the serious model builder. A series of models called Encore Unveiled include some useful programs like a new product development model that uses Monte Carlo simulation, which allows examination of a range of random values in a situation rather than a single best guess.

Ferox also markets a product called Helpmate that can be used to design Help screens, link Help screens in a single file and create self-running slide shows. It also has a model printer that will print formatted listings of model logic files, including an indexer that lists all reserved words and variables used in a model as well as included files. Finally, an analyzer gives pertinent information concerning storage and other requirements about the model.

A comprehensive array of functions are included with Encore, including various tax and social security tables for computing tax and FICA liabilities; depreciation tables, including the latest ACRS; and the most commonly used financial functions. The latest release of the program, Version 3.1, can read data from Lotus 1-2-3 and Symphony files, which means that upgrading to Encore from spreadsheets will not be quite so onerous a task.

The executive language takes care of program flow and chores like menu creation and option selection, while the report language allows the creation of formal reports sharp enough for the most particular chief executive officer or director. It will not take long for the seasoned programmer to get up to speed.

Power does have its price, however. The first-time user should expect to spend a good deal of time getting to know the ins and outs of Encore. Ferox runs some exceptional training programs that take most of the mystery out of the program. The help from the support staff is also excellent.

Encore is not copy protected and runs very nicely on an IBM Personal Computer AT-class machine. Execution time on a personal computer is a little slower, but not unacceptably so. Encore is an excellent example of a full-featured development system. It is a procedural system, so users do have to pay attention to the order of model logic, but the compiling pro-

cess does a good job of analyzing models and letting users know what and where problems are.

Encore includes a complete presentation graphics capability in its executive control system, as well as an easy-to-use spreadsheet graphics capacity. But it is the Executive control languages that make Encore such an ideal development tool. At

> *Encore is a procedural system, so users do have to pay attention to the order of model logic, but the compiling process does a good job of analyzing models and letting users know what and where problems are.*
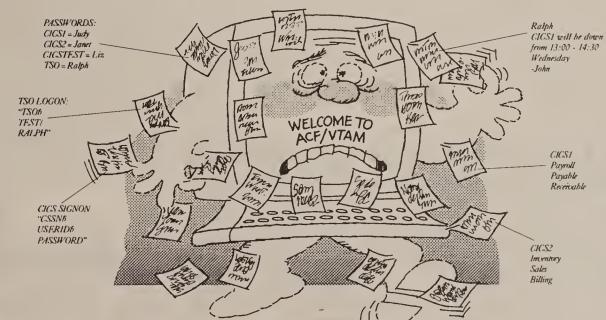
$495, Encore is also a good buy. It requires 512K bytes of random-access memory and is well documented in two spiral-bound manuals that are small enough to be carried in a briefcase.

Javelin from Javelin Software, the newest program on the block, offers some technological enhancements over other modeling programs

that make it a joy to use.

More interesting than its ease of use is Javelin's view approach to modeling. Once a file is established in Javelin, there are 10 different options for viewing the file. Users can see a diagram of the relationships among variables or a list of variables. They can also look at a spreadsheet of data or a listing of all the errors, macros and notes in the model. Each of these views of the data file allows users to focus on a specific aspect of the underlying information.

Moreover, users can see a variable with a table of data or as a graph. Javelin's graph view is a presentation-style graph for printing or plotting. In the program's Quick Graph view, data can actually be entered by

Product Spotlight/PC Modeling Software

Continued from previous page

graphing it. These potentially dangerous graphics features allow users to define data elements by painting a graph of what they think the series will look like. Users can then paint their sales graph right into the ceiling — provided it makes sense. The problem is that we tend to paint what we would like to see rather than what we should really expect to see. It is a slick way to explore data, however, and can be used very nicely in "what-if" analyses.

Ease and efficiency of use are the bywords of Javelin. The most useful feature in the program is the library of predefined functions. If a user is finishing up a model and wants to enter a lengthy formula, he can tell Javelin to present a pull-down window with all the available variables in it and select the one he wants without any typing at all. This relieves the most frequently cited problem with model logic — that it takes a lot of typing.

Javelin also prompts for the entries required when a function is used. As the required parameters are entered, the program prompts for each correct piece of information. Javelin allows the construction of functions, called building blocks. Building blocks can be time delay, simulating the effect of sales vs. cash collections; roll-up, consolidating data from several models; import, importing data from other Javelin models; lookup, representing fixed relationships like tax tables or discount tables; or curve, allowing

construction of a curve that represents the relationship between two variables.

The worksheet view in Javelin is interesting because it does so much automatically. The program is especially handy at dealing with time series data. Conversions to and from standard dates (daily, weekly, monthly, quarterly and annual) are made automatically as needed by the program. Nonstandard dates (biweekly, for example) can also be accommodated easily.

Javelin is not a model builder's dream. It does not lend itself to system development or self-running and self-documenting programs. It is an analytical tool for the executive who does not want to learn to program and who has outgrown his spreadsheet.

Javelin has been able to retain much of the intuitive nature of a spreadsheet while moving into the more sophisticated modeling class. With an ability to import and export Lotus data, Javelin is right at home on the same system with a spreadsheet that can import and export Lotus files. This is because of the menu design, on-line Help and program responses and requirements

that tax the user as little as possible while offering as much assistance as possible.

The latest version of Javelin is not copy protected. It also has some enhanced macro features that make it possible to build more automatic applications. Javelin will not replace the systems development program, but it does offer a good look at where modeling technology should be going. Other modeling program vendors

> "
>
> *Javelin is especially handy at dealing with time series data. Conversions to and from standard dates are made automatically as needed by the program.*

would do well to look closely at the human factors engineering of Javelin.

Microprophit, a procedural modeling program from Via Computing, is the least sophisticated package technologically — it is written in compiled Basic. But while it shows signs of age, it still packs a great deal of power. Microprophit is the PC version of Prophit, a mainframe modeling program that has been available for some time. It uses a somewhat cryptic line-by-line approach to modeling that does not rely on English-like variables.

With some conversion, data from the mainframe version of the program can be moved to the PC version. Likewise, model logic can be moved. Each line of logic consists of

a line number, title, operator, category index, decimal specification, print control code, rounding control, totaling control and factors and references. A typical model logic line looks like this:

1000,Interest Rate,INPUT,,0, YES,NO,S,,,
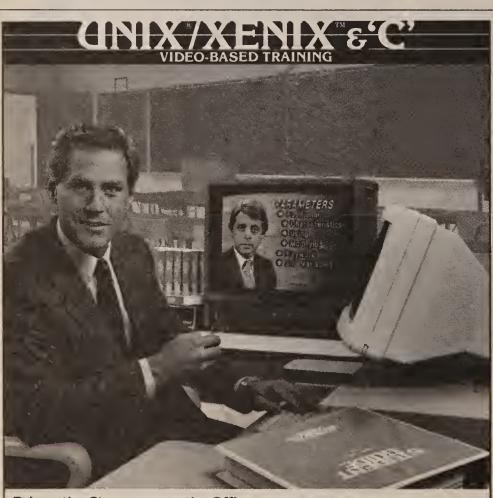
This line is parsed by the model compiler, and, based upon the position of the command or code, certain actions are specified by the program.

The model logic is read by the program from the disk one line at a time. This slows Microprophit down, but it makes large models — containing up to 8,999 lines of logic — possible.

Model logic is entered in a template that assists in making the proper entry in the proper place. The template has a column for each category. Once the model is entered, it must be compiled before the program can use it.

Microprophit does have some advanced features, especially for forecasting from history, including cyclical, linear, compound, quadratic and parabolic projection methods. Those familiar with basic forecasting methods and who know their data well can do reasonable forecasts by fitting the appropriate method to the data and allowing the program to process the projections automatically.

Consolidations are another strength of Microprophit. Users who have a complex consolidation model for manpower requirements for a multiple shift operation, for exam-

Product Spotlight/PC Modeling Software

ple, and who want to see the overall impact on the company of changes in labor rates, may be faced with multiple, overlapping consolidations of various levels of organization. Microprophit can handle the most complex consolidations easily.

Data analysis is aided in Microprophit by "what-if" and goal-seeking features like those found in the other programs. Users can also selectively process columns or do line-to-line ratio analysis with Microprophit.

A comparison report mechanism allows users to see only the differences between two model runs. This is useful for reviewing the changes wrought by a few alterations in the assumptions on the rest of the model.

Once data has been obtained, Microprophit has a formal built-in reporting system that can produce presentation-quality documents from data. Its line-numbering system tells the program what lines to print and where.

The system is a little cumbersome, however, especially when its somewhat cryptic model logic is compared with newer modeling languages.

Part of the reporting system includes a graphics section that does not offer a lot of functionality. There is a choice of bar, line or pie charts, but not a lot of frills.

The graphics section is fine for analytical work, but any presentations will be best planned for with a separate graphics package. Copies of the graphics must be dumped to the printer with the PrtSc function. Plotters are not supported in this system.

Service and support from Via Computer are excellent. The company furnishes a very complete corporate analysis model with the program as a guide to get started.

The model will need little change for many applications. It gives the new user a good look at how the program works and will stir interest in building models.

The corporate model also includes routines that can be copied to other programs, saving development time. Microprophit can also share data with its host system counterpart.

On balance, Microprophit has the least to recommend it in this group, but it does have a large following because of its mainframe roots. It is not as intuitive and lacks the speed of more modern programs.

The visual interface is also lacking, because users cannot see data as they can in the spreadsheet view of

the other programs.

The professional MIS manager may wonder why all the fuss is being made over modeling programs. I cannot emphasize enough how powerful these programs have become on PCs in the last few years.

Many host systems are already running out of CPU seconds. If the MIS manager can free up CPU time by offloading modeling programs to a PC environment, it makes economic sense to explore the options. Most PC modeling programs only lack the mass storage advantage of host systems. Otherwise, these programs are faster, easier to use — and certainly less expensive.

This last fact is one MIS managers will have to deal with as they try to explore the PC option for modeling. Some software houses will

not sell the PC version of their program unless they can sell the host system version as well. Others discourage purchase of PC modeling software, fearing a loss of revenue as the host version becomes superfluous.

Their concerns are well founded. PC modeling programs have most of the power, few of the constraints and a fraction of the cost of their mainframe cousins.

While host system pro-

grams will not be immediately replaced, PC modeling programs running on large AT-class machines will continue to take a larger share of the formerly mainframe-only market. It remains to be seen if the software houses can manage the transition and remain profitable. What is clear is that strategic shifts in thinking will be necessary as we move more to the distributed environment PCs make so attractive. ∎

PC-BASED FINANCIAL MODELING PROGRAMS

Company	Minimum Memory Required	Multidimensional Modeling (number of dimensions)	Simultaneous Equation Solving	Consolidation	Goal-Seeking Analysis	Smoothing	Multiple Regression	Standard Deviation	Depreciation	Compound Interest	Internal Rate of Return	Spreadsheet	Graphics	Data Base Management	Micro-to-Mainframe Link	Price
Abacus Data Systems, Inc. Suite 101 2775 Via De LaValle Del Mar, Calif. 92014 — *Fastplan*	256K	11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$699.95
Access Technology, Inc. 6 Pleasant St. Natick, Mass. 01760 — *20/20*	384K	2	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$500
Analytical Software 10939 McCree Road Dallas, Texas 75238 — *The Financial Analyst*	128K	3	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	$225
Business Planning Systems, Inc. 2 N. State St. Dover, Del. 19901 — *Plan 80 3.2*	384K	Unlimited	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	$1,500
Chang Laboratories, Inc. Suite 200 5300 Stevens Creek Blvd. San Jose, Calif. 95129 — *Microplan 4.04*	256K	Unlimited	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	$295
Computer Associates International, Inc. 2195 Fortune Drive San Jose, Calif. 95131 — *Supercalc 4*	256K	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$495
Comshare, Inc. 3001 S. State St. Ann Arbor, Mich. 48104 — *Personal W*	384K	3	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	$595
Desktop Financial Solutions, Inc. 407 Main St. Spotswood, N.J. 08884 — *DT/FPS*	256K	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	$795
Dialogue, Inc. 19 Rector St. New York, N.Y. 10006 — *PC Analect*	640K	Unlimited	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	$500
Econica, Inc. 2067 Massachusetts Ave. Cambridge, Mass. 02140 — *Econometrics Software Package (ESP)*	384K	256	Yes	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	No	$1,295
Execucom Systems Corp. Arboretum Plaza One 9442 Capitol of Texas Highway N. Austin, Texas 78759 — *IFPS/Personal*	512K	None	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	$895
Execuware, Inc. 3690 W. Gage Center Circle Winston-Salem, N.C. 27103 — *Financial Analysis Package*	48K	None	No	No	No	No	Yes	No	Yes	Yes	Yes	No	No	No	No	$92.95
Ferox Microsystems, Inc. Suite 1205 1701 N. Fort Myer Drive Arlington, Va. 22209 — *Encore*	384K	Unlimited	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	$475

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. Further product information is available from the vendors.

CW chart compiled by Patricia Schlichte.

Product Spotlight/PC Modeling Software

Company	Minimum Memory Required	Multidimensional Modeling (number of dimensions)	Simultaneous Equation Solving	Consolidation	Goal-Seeking Analysis	Smoothing	Multiple Regression	Standard Deviation	Depreciation	Compound Interest	Internal Rate of Return	Spreadsheet	Graphics	Data Base Management	Micro-to-Mainframe Link	Price
Fox & Geller, Inc. 604 Market St. Elmwood Park, N.J. 07407 *Oz*	256K	4	No	Yes	No	No	No	No	No	No	No	Yes	Yes	No	No	$99
IMRS, Inc. 1033 Washington Blvd. Stamford, Conn. 06902 *Micro Control*	256K	3	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$40,000
Javelin Software Corp. Building 200 1 Kendall Square Cambridge, Mass. 02139 *Javelin*	512K	16	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$695
Lattice, Inc. P.O. Box 372 Glen Ellyn, Ill. 60138 *Unicalc 1.0*	256K	2	Yes	No	No	No	No	No	No	No	No	Yes	No	Yes	No	$139.95
Odin Research 384 Old State Road Berwyn, Pa. 19312 *Otis*	384K	Unlimited	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	$995
Ross Systems, Inc. 1860 Embarcadero Road Palo Alto, Calif. 94303 *Maps/Pro*	512K	12,000 lines	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$1,250
Sinper Corp. 8901 Tonnelle Ave. North Bergen, N.J. 07047 *TM/1*	256K	8	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	$795
Simplan Systems 300 Eastowne Drive Chapel Hill, N.C. 27514 *Micro Sim*	384K	3	Yes	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	No	Yes	$850
Smart Software, Inc. 392 Concord Ave. Belmont, Mass. 02178 *Smartforecasts II*	256K	None	No	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	$695
SPSS, Inc. 444 N. Michigan Ave. Chicago, Ill. 60611 *SPSS/PC*	384K	None	No	No	No	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	$795
Structured Systems Group, Inc. Suite 203 111 Broadway Oakland, Calif. 94607 *Magicworksheet*	128K	2	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	$250
Supersoft, Inc. 510 W. Park Ave. Champaign, Ill. 61820 *Scratchedpad Plus*	128K	3	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	$195
Texasoft, Inc. P.O. Box 1169 Cedar Hill, Texas 70104 *The Thinker Electronic Worksheet*	128K	None	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	$3,995
Thorn-EMI Computing Software Ltd. 285 Mill Road Chelmsford, Mass. 01824 *Micro-FCS*	386K	None	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	$2,000
Via Computer, Inc. 7177 Construction Court San Diego, Calif. 92121 *Microprophit*	256K	9,000 lines	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	$695
Walconick Associates 6500 Nicollet Ave. S. Minneapolis, Minn. 55423 *Forecast Plus*	192K	Unlimited	No	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	$595
Weiss Associates, Inc. 127 Michael Drive Red Bank, N.J. 07701 *Venture*	192K	2	No	Yes	No	No	No	No	Yes	Yes	Yes	No	No	No	No	$395

Power has never

In Depth

Principle of 'least astonishment' can polish up interface design

By BOB STAHL

"Let me get this straight. You want to tell our programmers what to put on the screens? My people already know what to put on the screens. We have CICS standards in this shop."

The above statement illustrates the type of hurdle that must be overcome in order to introduce user-friendly design techniques into many MIS departments.

Like any new idea, the concept of engineering ease of use into software has been rapidly accepted in some organizations, while it remains ignored or misunderstood in others.

A previous article [CW, Feb. 3] gave specific design techniques for making mainframe software easy to learn and to use. These techniques include the following:

● Making the software transparent to users.

● Making the software flexible enough to handle minor deviations from a correct response.

● Supplying users with on-screen ready answers to basic questions about their location and status.

● Offering software features to that help users accomplish their tasks with minimal effort.

● Preserving the integrity of users' data and work efforts through confirmation of potentially damaging tasks.

● Helping users feel in control of the machine.

Readers wanted to know how to implement the techniques in their corporate environments, particularly the corporate political environment.

Following are some suggestions that have proved helpful in other organizations. In addition, several interface design techniques are introduced that aid the process.

Developing support

Successful implementation requires two steps:

Building organizational support for the idea that user-friendly design is important and cost-effective.

Providing a methodology that is practical and that integrates well with the existing development process.

For an organization to make a commitment to software usability, support is needed from management, systems and training.

Management's ultimate responsibility is to make — or save — money for the organization. In terms of return on investment, software usability stands up very well (see story page 64).

Different systems will yield different

Many developers are "too busy" to pay much attention to user interfaces. But in an interactive system, end users are the most expensive resource.

About the author
Stahl is president of The Interface Design Group, an Oakland, Calif., consulting firm that provides interface design, testing and training.

ILLUSTRATION BY CHRIS DEMAREST

numbers, but the results should be similar. Even if the numbers used for the costs and benefits create are substantially different, the ratio will still be striking. These are the kinds of numbers that get management's attention.

Designer hurdles

Most technical people take pride in the systems they design. If these designers are less than enthusiastic at first about building in user-friendliness, the reason may be one of the following:

● They do not understand the benefits.

● They have had no training in how to design user interfaces.

● They are not rewarded for designing them.

They do not understand the benefits. Unfortunately, no trumpets sounded when the big change in commercial systems took place about five years ago. Instead, there was a gradual transition from batch systems run by skilled technical personnel to interactive systems operated by a broad spectrum of nontechnical users. The definition of a good system also gradually changed, with ease of use becoming an increasingly important feature to the new breed of end users.

Batch systems receive input from remote sources, but the program need not be overly concerned about how these sources work. The input might just as well be beamed down from outer space as far as the program is concerned.

This viewpoint carried over to interactive systems; users are viewed as one more remote input source. The resulting design inefficiencies are best understood in terms of performance tuning. Performance tuning

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In Depth/Polishing User Interface Design

tries to maximize the efficient use of the most expensive resources as well as those that cause bottlenecks. In an interactive system, the user is the most expensive resource and is the one through which overall system performance is single-threaded — that is, system performance is directly dependent on user performance. Seen this way, the importance of usability becomes clear.

They have had no training in how to design user interfaces. Until recently, no training in the design of user interfaces was available. Several excellent courses are now offered by vendors and consultants, and the training can take as little as two days. It is up to the technical staff to request it and management to approve it.

Usability engineering can and should be a standard item in every good technician's arsenal of tools. The internal training organization is often an enthusiastic advocate of ease of use in software. Trainers and documenters are usually the first to see end users' problems with software and support measures that will reduce end-user confusion and frustration.

One problem is that many training organizations are chartered to respond to training requests as a result of a formal needs assessment process. If interface design training is to be offered, either the technical staff has to be aware that the training exists and request it or training organizations have to assume an activist role in making the availability of such training known.

They are not rewarded for designing them. A major problem is that system developers are currently rewarded for doing one thing — meeting deadlines. If the code works and matches the specifications, in many cases that is a bonus. The usability of the resulting system is not a consideration.

Not surprisingly, many developers working under this reward structure are "too busy" to give much attention to the user interface. But Thoreau reminds us, "It's not enough to be busy; so are the ants. The question is, what are we busy about?" An efficiently built system that is difficult to use is a poor system.

The development team seldom deals with the aftereffects of its work. It meets the deadline, moves code to the production library and goes to work on the next set of modules. Support and productivity costs do not come out of its budget; it only incurs costs while the system is in the development cycle.

To change the reward structure in an organization, it is necessary to reach the person whose responsibility spans both developing the system and seeing it successfully implemented and supported. This person, who is high enough in the organization to have a budget that encompasses the total system cost, has both the power and the motivation to authorize attention to usability. Under this sponsorship, the developers — for sound economic reasons — can give usability the attention it deserves.

New motivation

One mechanism for reinforcing the need and rewarding the effort is Usability Acceptance Testing, which is an integral part of the design process. The use of this testing mechanism is widely accepted in DP circles, but it is usually applied to such

> ***One problem is that system developers currently are rewarded for doing one thing — meeting deadlines. If the code works and matches the specifications, in many cases that is a bonus.***

In Depth/Polishing User Interface Design

Example: State diagram for movie review retrieval program

Developers can draw a user interface graphically as a state diagram. Each circle represents a state the system can be in (a prompt or menu). The arrows show transitions triggered by user input. State diagrams allow developers to walk through the user interface and spot inconsistencies or dead ends.

things as transaction processing rates and response times. It is relatively easy to extend this familiar concept to testing the user interface.

Briefly, usability acceptance criteria are an extension on the usability requirements definition, which stipulates the user profile, design objectives and design constraints of software for a specific group of users. These criteria list specific and measureable standards for usability.

For example, they might state, "After two hours of training, operators with at least one year of invoice processing experience will be able to process 30 invoices per hour, with an error rate of less than one in 10 invoices. An error is defined as . . ."

The power of this approach is that it incorporates the idea of "producing a truly usable system" into the definition of "doing a good job." Designers and programmers will now be rewarded not only for meeting deadlines with code that matches the specifications but also for paying attention to the user interface.

The process is also self-regulating, since the staff's knowledge that the system has to meet usability criteria will trigger interim testing of the various pieces of the interface. If the

staff needs to acquire new design skills to meet the criteria, they will be motivated and justified in requesting and receiving them.

The second step in ensuring software usability requires providing a practical set of tools that will integrate well with the existing development methodology. Two things are needed: a device that permits an overall view of the interface for review in walk-throughs and a mechanism to ensure that usability receives the appropriate attention throughout the design cycle.

The attention to the interface is achieved by Usability Acceptance Testing, while the overall view is provided by a technique called dialogue mapping.

Dialogue mapping

The design techniques described earlier are local techniques; they apply to the design of individual screens, menus, messages and so on. For the design to be reviewed effectively, we need a global description of the interface. Dialogue mapping is the process by which the system is described globally.

A global view is necessary for two reasons. First, pieces of the interface

Usability adds to bottom line

Management's primary task is to make — and save — money. The chart at right shows the costs and benefits that could reasonably be expected when a company improves human factors in a typical interactive system. The system in this example supports 150 users, who are on the system an average 25% of their work time. The system's projected lifetime is five years.

What are the costs for making the improvements in usability? Assume that the system takes 15 designers and programmers one year to construct. Training them all in good interface design techniques takes two days and costs $500 each for tuition, for a total of $7,500.

According to Henry Simpson (*Design of User-Friendly Programs*, McGraw-Hill, Inc., New York, 1985), about one-third of the effort in constructing an interactive system is spent on the interface. Suppose that in addition to training the staff to do a better job, we also increase the time spent on the interface by 30%. If staff costs are $40,000 per year, this adds $60,000 to the cost of the system. So in this example, the total cost of improved interface design is $67,500.

On the benefits side, there are two different areas of potential savings: support savings and productivity savings. To calculate support savings, assume that without improved human factors, the system requires three full-time support people, at an average total cost to the company of $40,000 each per year in salary and benefits. These support people handle all problem resolution, training and documentation. If a more usable system can be supported by two people, then the support savings will be $40,000 per year over the five-year system lifetime, or $200,000.

Productivity savings can be even

larger than support savings. According to Ben Shneiderman (*Human Factors and Interactive Computer Systems*, Ablex Publishing Corp., Norwood, N.J., 1984), about one-third of users' time on computer systems is spent either making or correcting errors.
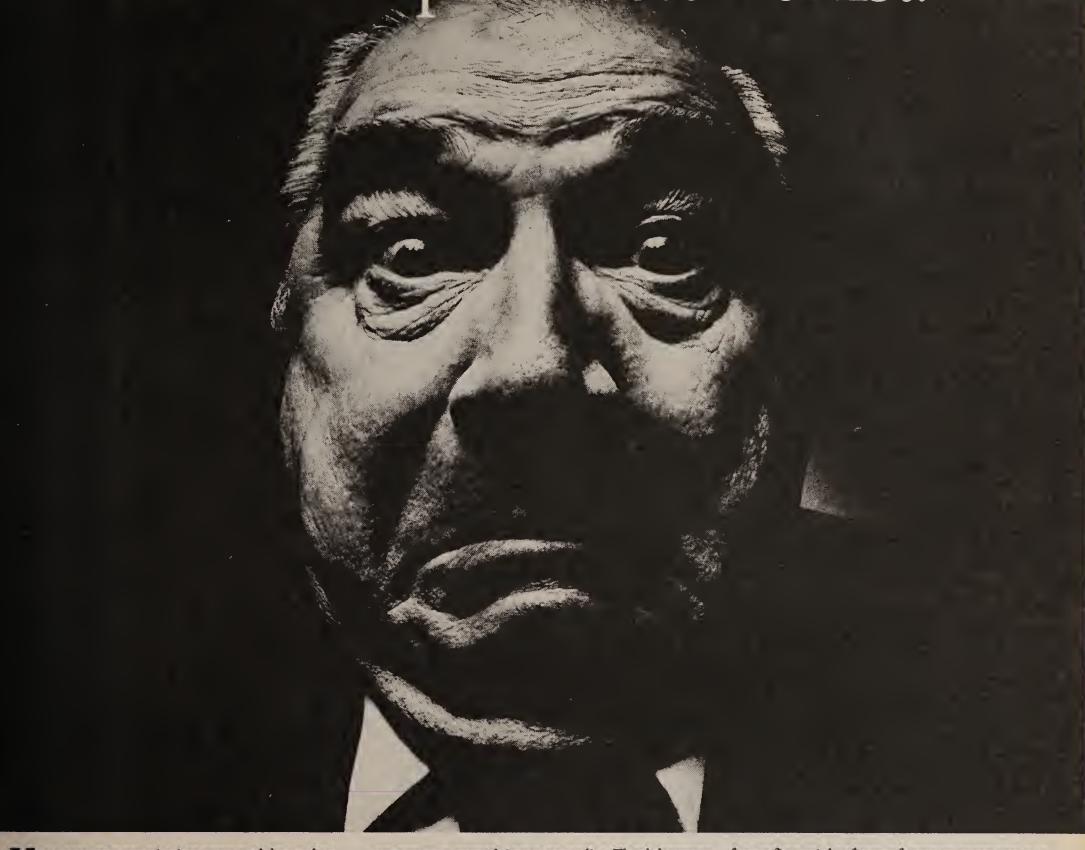
Good human engineering should easily reduce this by half. In addition, more efficient transactions and control sequences can be constructed that are more efficient. To be conservative, let us assume that the overall productivity increase is 20%. If users cost an average of $25,000 per year and use the system 25% of the time, then the overall 20% productivity savings for 150 users over the five-year system lifetime equals $937,000.

The benefits combine $200,000 in reduced support costs with $937,000 in increased productivity for a total of $1,137,000 vs. a cost of $67,500. These amounts are direct contributors to the organization's bottom line.

The calculation for your own system will yield different numbers, but the results should be similar. Even if the totals vary from this example by an order of magnitude, the cost/benefit analysis remains startlingly favorable.

— BOB STAHL

Cost/benefit analysis

The cost of improving interface design for a typical system amounts to 6% of the potential savings.

Costs:	
• Training for fifteen designers	$7,500
• Design time increased by 30%	$60,000
Total cost	**$67,500**

Benefits:	
• Support costs reduced by 33%	$200,000
• Productivity increased by 20%	$937,000
Total savings	**$1,137,000**

Watch what happens next time you ask a mainframe software vendor for a complete customer list.

You may get a convincing song and dance, but underneath it's a different story. Behind those pat answers that software vendor is actually sweating and squirming.

Why don't they want you to see a complete list? Simple. They know that their size and name familiarity do not guarantee happiness. Many "single source" or "all-things-to-all-people" vendors have, at best, uneven quality across a multi-application product line. They know that their customer list may contain a good number of less-than-happy clients. It's difficult for these vendors to commit the human and monetary resources necessary to produce the type of superior product available from a firm that specializes in a single application area. A firm like Data Design.

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Dialogue mapping — table form

System Starting State (Prompt)	User Action	System Response (Process)	System Ending State

E X P E C T E D
- Expected
- Unexpected
- Expected
- Unexpected
- Expected
- Unexpected

U N E X P E C T E D

Developers can also represent a user interface in table format. Here, the developer fills in the blanks on the table form to show all of the possible transitions the user could invoke from a single state (system prompt). By dividing user actions into "expected" and "unexpected," developers can ensure they cover all possibilities. A finished table becomes the coding specification for programmers.

— such as screens — are static. Users will be moving through these pieces dynamically and will see a flow of events. Their understanding of that event flow will critically affect their ability to use the system. A global view can show this event flow for different end-user paths.

Second, a global view — particularly a graphic representation — is useful for walk-throughs. If the walk-throughs are rigorous, end users will not be able to "break" the system accidentally or on purpose. The system will also not have any blind alleys or unintentional loops. Eliminating these design oversights goes a long way toward eliminating user frustration and sharply reduces the need for support and training.

Finally, the dialogue mapping technique yields some important design guidelines, to be discussed later, that cannot be readily deduced from a local approach.

State diagrams

The primary tool for dialogue mapping is the state diagram. A state diagram gives a graphical view of the interface, with different facets of the interface represented as states.

To understand the state concept, think of a lily pond with lily pads in it. A frog sits on one of the lily pads. When disturbed, the frog jumps to another pad — or sometimes jumps straight up, landing again on the same pad. In this analogy, the system is the frog, and the states in which it can exist are the lily pads. When something happens, such as user input, the system may make a transition from one state to another.

A state is defined by the set of all the operations that the user can perform within it. Two states will be different if the system responds differently to the user's action. For example, two states found in some systems are command mode and edit mode. You can do different tasks in the edit mode than in command mode, so the states are different.

Take for an example a small state we will call the Confirm state. When you issue a "Quit" to leave the package, the system asks, "Do you really want to exit now? (Yes/No)" At that point, the only responses that the system will accept are Yes, which moves the user out to the main menu, or No, which returns the user to the Select Movie state. All other responses are ignored. The user's choice of Quit moves the system to a new state — Confirm. Although the screen looks much the same, there is now restriction on the allowable user actions.

Note that the system is not always

in a state, given the definition found in dialogue mapping. The system is in a state if, and only if, it will accept input from users at that point. It is necessary to distinguish between a state and a process. A process is internal computer activity that may or may not be a state. It is a state if the user can enter input.

If we draw the states as circles and the transitions as arrows, we get a diagram. Each arrow is labeled with the input that causes the transition. The resulting state diagram is a map of the changes that can take place in the system and of what triggers them.

A state diagram is excellent for a walk-through of the interface. Possible user loops become visible, as do facts such as, "You can't get there from here!" Inconsistencies come to light — for instance, "Why do users say 'Return' to get back to this screen from one place and 'Resume' to get there from another?"

State mayhem

The importance of states is that users typically must move through many states to accomplish a task. A cause of users' confusion comes from not understanding why they cannot do something or why the system responded in a surprising way.

Consider a story reported in the San Francisco *Chronicle* on March 27, "San Jose Public Library 'Loses' 267,000 Books":

"The San Jose Public Library could lose $100,000 because an employee mistakenly deleted records of 267,000 books from a main library computer file, the head librarian said yesterday."

The mayhem was caused when the new employee "apparently worked with the computer's circulation file while it was programmed to delete old information." That was the price of state confusion in a library system. Readers can no doubt construct a more chilling scenario in their own organizations.

Whether or not the system will be clear to users depends upon how the states are defined, how the states are linked to displays and how consistent we make the actions that cause the transitions. If these things are done well, the payoff will be fewer errors, more user self-confidence and less of a need for training.

Movie review retrieval system

The state diagram on page 64 illustrates a simple system that was designed as a class exercise in interface design. The system depicted is an on-line information service. It provides access to one- or two-paragraph movie reviews. Users can specify retrieval criteria by movie type — for example, comedy, drama or western, actor/actress name, year made or any combination of these that the user happens to know.

If the user's selection criteria are valid, he goes to one of three places, depending on whether the system finds none, one or many reviews in the data base that match the criteria.

If no reviews are found, the user

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> *The power of Usability Acceptance Testing is that it incorporates the idea of 'producing a truly usable system' into the definition of 'doing a good job.'*

In Depth/Polishing User Interface Design

is returned to the selection screen. If a review is found, it is displayed (View). If many reviews are found, the user selects Narrow List, where he may apply additional criteria, cancel the request or go to View when he is satisfied.

The Print state is of special interest, because it illustrates the critical difference between a state and a process. Print is a state only because the user can intervene (with the Stop and Restart commands). If Print did not allow the user to intervene, Print would be a process, not a state.

Discovering interface problems

Several types of interface problems can be seen on a state diagram — blind alleys, loops and inconsistent navigation commands.

There is another, deeper problem that goes to the core of many causes of user confusion with systems. Starting in a given initial state, *the same user action will not necessarily produce the same results*. This is because systems often use hidden internal variables, such as "flags" and "switches," to determine what to do. The effect on the user is confusion and frustration: "I did this yesterday, and I went to Screen A, but today I did the same thing, and I wound up some place I had never seen before."

In the movie review retrieval diagram, this occurs at the branch point where a user goes to different places depending upon whether the system found many, one or no occurrences in the data base. The user had no way of knowing what the system would find, and the resulting transportations violate the "principle of least astonishment" in interface design, which states that the system should not produce unexpected results to user actions.

An improvement would be to avoid the computer-initiated branching and let users make the decision. After a movie selection, users would always go to a status screen, which would display the number of movies found and ask users "Would you like to (a) try again, (b) see your selections or (c) narrow the list?" In this case, users initiate the branching, and it no longer seems mysterious.

Table form

While the graphical form of the state diagram is most useful for checking navigation paths, there is an equivalent table form of the interface that has other advantages (see chart page 66). This table is a blank sheet for describing possible transitions from one initial state. The "Prompt" could be a screen, a menu, a question from the computer and so on. Reading across the top, we

see that this form separates the idea of a process from that of a state transition. In some cases, such as menu selection, the process is a trivial one of transferring control. In other cases, the process can involve extensive activity on the computer's part.

User actions are divided into expected and unexpected actions to make sure that the software designers think of all the possibilities. This will ensure that the system

cannot be broken. If users are looking at a menu screen, the expected actions might be to choose one of the menu items, ask for Help or quit. An unexpected action might be hitting the Ctrl and Alt keys simultaneously. With this type of analysis, these possibilities will have been anticipated.
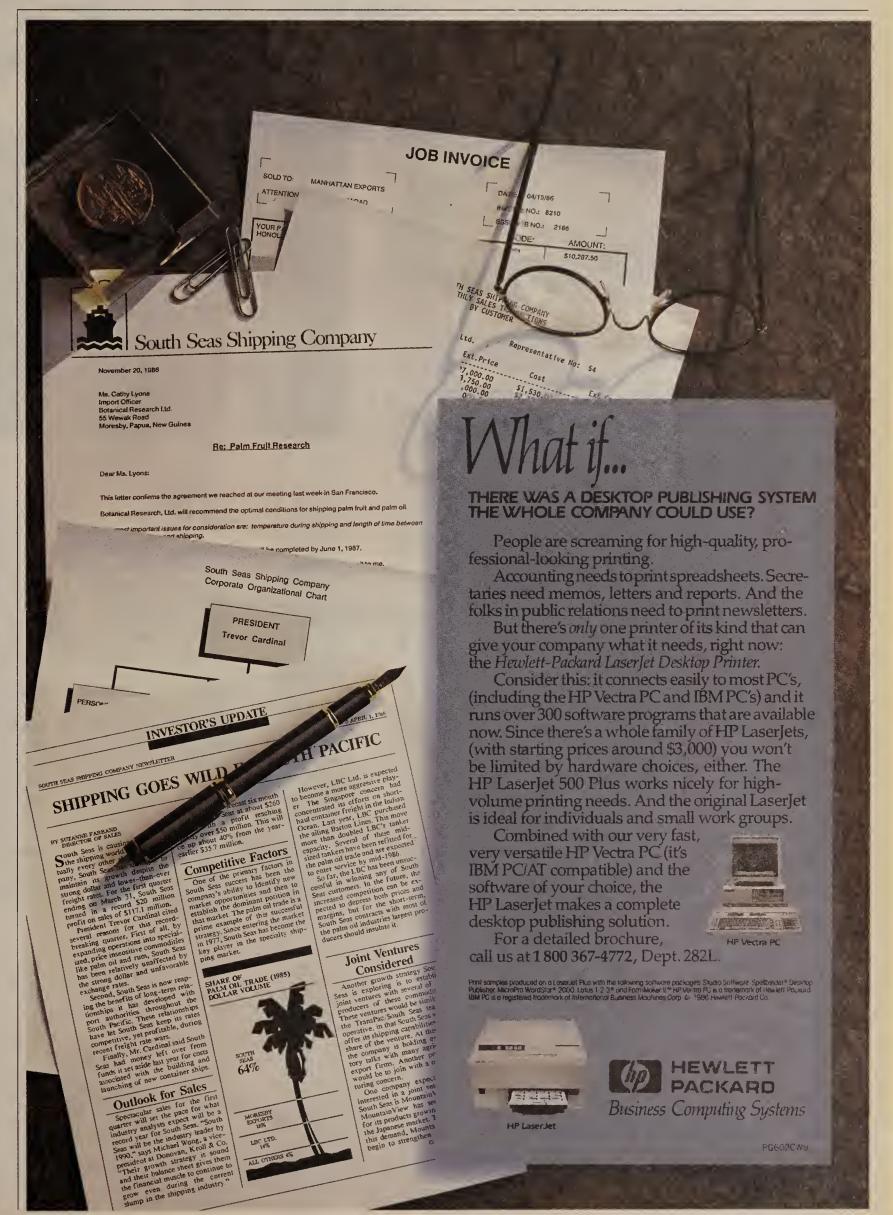
For the expected user actions, the system response — the process — is further subdivided into expected and unexpected responses. This

is the result of the hidden system variables mentioned above. For example, one user may try to access a shared data base, but the data base is locked for update by another user. The form forces us to anticipate this event and have the system respond sensibly to it.

A final benefit of the table form is that it constitutes a coding specification. The designers can say to the coders, "Here is the table form for the main menu. It lists all the

possible user actions, the system responses and what should happen in each case."

One limitation of the table form is that it is difficult to see the design globally. Taken together, the graphical form of the state diagram and the table form provide a complete view of the global interface design.

Dialogue mapping provides a structured method for reviewing interface in the same way that data flow diagrams permit an analysis

ACCESS
ACCESS

BENEFICIAL DID.

A financial services company in a state of rapid growth needs a state-of-the-art information system technology. That's why Beneficial Corporation turned to Cullinet Software and its three-level integration. Serving credit, banking and insurance customers around the world, Beneficial will utilize Cullinet's IDMS/R, Fourth Generation Applications and Information Center Management System. Together they will give Beneficial the speed and accuracy that sets their financial services apart. Beneficial recently bought Cullinet applications packages to handle everything from general ledger to human resources management. And they're convinced that the flexibility and responsiveness of Cullinet's relational architecture will let them react quickly and positively to the pressures of a highly competitive business environment.

MONROE DID.

The ability to leverage production with truly efficient decision support is what put Monroe Auto Equipment Company on the road to Cullinet's IDMS/R, Manufacturing Applications and Information Center Management System. The world's leading manufacturer of automotive ride control systems, including popular Monroe shock absorbers and struts, they required Cullinet's broad product offering. Their objectives: reduce inventory, cut scrap and improve labor efficiency. They're meeting these objectives. Cullinet's technological superiority has allowed Monroe to improve planning of its manufacturing operations – manpower, machines and materials – while it helps generate a production schedule that more closely corresponds to its customers' requirements. The Cullinet solution is definitely making business run more smoothly at Monroe.
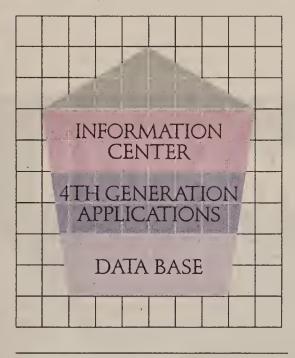
COSMO OIL DID.

Three oil companies merged to create Cosmo Oil – Japan's third largest supplier of petroleum products. That also created the problem of trying to coordinate three disparate methods of importing, refining and distributing petroleum. Cosmo's management team agrees they would not have been as successful without Cullinet products and the leadership and timely support of Cullinet's Japanese representatives. They installed IDMS/R in October of last year. Within five months, it was running every facet of Cosmo – from petroleum import to sales and accounting. The system quickly improved distribution and inventory management, and reduced system development times. Cullinet has allowed Cosmo to meet the challenges of their business in a fraction of the time and at a fraction of the cost of competitive systems.

of what happens to the data in a system. When state diagrams are used at walk-throughs, they also provide a framework for a detailed examination of the local interface features of each state.

Golden guidelines for interface design

A careful study of state diagrams yields some design guidelines that can be applied during review:

• Each state should utilize an obviously different display.

• System-induced transitions should be minimized in favor of user-induced transitions. Do not let the same action cause the system to take the user to different states as a result of something that the user does not know. Let the user make the transition explicitly.

• Do not take users to the same final state via different processes without making sure that they understand what has happened and what the consequences will be.

• When users do something that will set internal variables and thus affect the outcome of future transitions, inform them.

• Provide a status display of internal variable settings. Users should be able to ask what the consequences of the settings are and should be able to change the settings.

As we have seen, getting serious about software usability benefits everyone. The organization achieves substantial savings in support and productivity for a very modest outlay. The system builders get both the opportunity to explore new areas and the satisfaction of knowing that they are designing better systems. And end users receive robust systems that are a pleasure to use. ∎

Companies fund interface projects

By AMY SOMMERFELD FIORE

In an effort to squeeze the most from their computing resources, some companies invest heavily in interface design, even to the point of establishing separate units to oversee the interaction between people and technology.

Aetna Life and Casualty Co. of Hartford, Conn., is one such company. Hartford formed a People/Technology group after a study by the corporate planning division projected that potentially every Aetna employee would have access to the computer system by 1990.

Fred Schott, a consultant in Aetna's People/Technology group, lists the group's four focal points as the changing role of systems professionals, the role of managers, health issues and what Schott calls "normal-to-use" interfaces.

"We prefer not to say 'easy to use' because it implies a sort of lowest common denominator," he says. "Not all jobs are easy. 'Normal to use' means the tool is so well integrated with the actual job you're doing that you don't usually notice the tool at all."

The People/Technology group distributes literature and provides computer-based and seminar training. Group members also provide feedback to project teams on interface elements like screen design and menu structure.

In April, Schott helped initiate a usability laboratory to set up methodologies and to provide a test area for new applications. Some project teams now include this usability testing step in their development cycle. Although the lab is now part of another department, Schott says, "Our group helped keep this issue alive."

Kathy Springer is the human factors analyst for information management systems at the Hartford Insurance Group, also of Hartford. Springer's position was created two years ago to help integrate human factors into system development.

Bottom-line impact

Springer's mandate includes improving users' job satisfaction, boosting productivity and improving the bottom line — but not necessarily in that order.

According to Sue Bargatze, director of the communications, procedures and human factors division, "Where we see cost benefits of screen design analysis is in shorter training and in user satisfaction. Also, we can decrease the number of written procedures needed to help users."

Springer reports that some of her most successful projects were one-on-one efforts between herself and someone from a project team. But, she says, "It's not really the way to make converts," since only one person at a time learns the new techniques. Bargatze says the goal for next year is to educate a broader audience.

Lorraine Borman, who chairs the special interest group on computer/human interfaces (SIG CHI) for the Association for Computing Machinery, reports that interest in human factors is growing. SIG CHI membership is up to 2,800, and this year's conference saw 1,350 attendees from academia, banking, insurance and medicine.

Each year, one quarter of the attendees come from just four or five companies — major software vendors. Borman says, "It took a long time before companies learned this lesson. It's appropriate for the message to come from the vendors." ∎
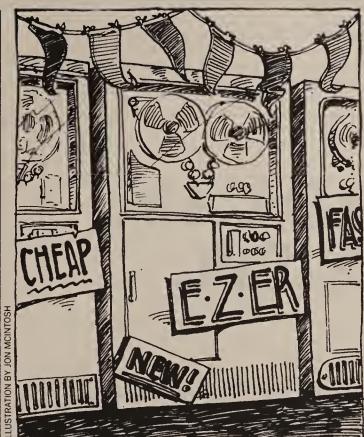
Fiore is a Computerworld *associate editor.*

In Depth

When 'new' is not 'improved'

Maintain, renovate or augment your systems rather than risk starting over from scratch

ILLUSTRATION BY JON MCINTOSH

Evolution, not replacement, answers users' need for updated functions • New systems only add to mounting application backlogs • Alternatives to replacing your system

By HOWARD MILLER

Each month, much literature is published advocating one system development methodology or another for installing a major new system. The key word here is "new." After 20 years, systems professionals are still installing new systems. However, a large percentage of these new systems are only a redesign or reinstallation of an existing computer-based system.

Companies are discovering that many of their present systems are obsolete and frequently assume there is no alternative to replacement. If the demand for replacement systems were to disappear, a large percentage of the much-taunted multiple-year backlog of new systems would go away. One comprehensive method that can significantly reduce the need for replacing systems is outlined here.

Misconceptions

The phenomenon of redesigning and reinstalling systems is based on some very common misconceptions about new system development:

Misconception #1. The criterion for determining the requirements for a new system should be "the best possible system."

In fact, every system that is installed is the result of a long series of compromises between cost and performance. These compromises reflect the values of the system users and result in a system that is "good enough," not "the best possible."

*Misconception #2. "Good enough" is de-*termined by careful, rational choice — that is, by careful thought and evaluation rather than by what the requester has learned to accept or expect.

What actually happens is that widely shared beliefs, even when mistaken, do more to shape the design of a system than does rational choice. At times, what is good enough is actually even better than what is physically required to achieve the goals of the system.

Misconception #3. Most new systems are successful and should be.

In reality, the failure rate for a new system, in whole or in part, is high. To be successful, a new system must demonstrate substantial advantages. It must be less expensive to operate, require less clerical effort or provide more accurate results. It is difficult for a new system to achieve these kinds of results.

Misconception #4. A radically new system is more desirable than advances and extensions of existing systems.

Despite all the good press on new systems, most monies go into extensions of existing systems. Extensions of existing systems require far less risk, give promise of more timely results and are more cost-effective; they are "good enough."

Misconception #5. The success of new systems rarely depends on the acceptance of the proposed users.

Developing a new system with dramatic new attributes does little or no good if the proposed users are not receptive, if the means to implement the new system is not available or if the users do not understand the system.

System evolution and revolution

The concepts of evolution and revolution are fundamental to the understanding of a system life cycle. The term evolution describes the prolonged period of growth in a system in which there are no major upheavals in the operation of the system — such as maintenance, enhancement and so on. The term revolution describes the periods of turmoil in the life of a system, like the merging of companies or changing hardware vendors or operating systems.

By its very nature, evolution creates its own revolution. At some point in the life cycle of a system, factors external to the system will affect the system in a manner that the evolutionary factors cannot accommodate, producing revolution. The periods of evolution are governed by four rules that determine the speed and direction of the system evolution:

• The first rule is that a system is not static: It is always evolving, changing; new systems or subsystems are emerging while

About the author

Miller is former vice-president of information systems for the Ponderosa Corp. restaurant chain in Dayton, Ohio. Before that, he directed the national data center of Federated Department Stores in Cincinnati.

In Depth/Alternatives to Replacing Your System

others are becoming obsolete. Perfect examples of this are found in the banking and insurance industries, in which government regulations and market demands require massive changes. These external influences cause new subsystems to be created.

• The second rule is that the process of evolution is slow but continuous. It does not operate at a consistent speed; it is subject to acceleration and deceleration. However, sudden major change is almost nonexistent.

• The third rule is the rule of common descent: Similar systems are related in concept and descend from a common origin. This concept is especially evident in areas such as computer architecture, operating systems, data base systems, manufacturing systems and so on.

A Indiana-based food processing

> **Every system installed is a result of a long series of compromises between cost and performance. These compromises result in a system that is 'good enough,' not 'the best possible.'**

plant found this third rule to be true when it was evaluating manufacturing systems for a new food processing and distribution facility. It discovered that a sophisticated on-line

manufacturing system was directly descended from a batch-oriented system developed in the 1960s. Further, a subset of that technology had even evolved for use on minicomputers.

Research further revealed that some of the system's leading competitors held common origins. This was the result of key system designers moving from one company to another and designing similar but enhanced versions of the system. This is not uncommon; similar types of relationships exist in software developed for other industries as well.

• The last rule is one of compromise. System evolution is not the result of shrewd design, but a result of a long series of compromises.

Constant compromise

This compromise is a two-step process. The first step is the

Successful evolution

In order for the evolutionary system development process to be successful, certain principles for success need to be recognized and exploited. These principles are as follows:

• It is usually easier to modify or improve something than to create something entirely new.

• Learning is gradual, iterative and accomplished by example.

• Users cannot accurately specify system requirements until they have used them.

• Identifying system improvements allows a greater chance of success than does identifying every attribute.

• Identification and implementation of high-return improvements improve the chances of successful new system development, sometimes indefinitely.

— HOWARD MILLER

In Depth/Alternatives to Replacing Your System

existence and propagation of variation in a system to satisfy the specific needs of users. No two systems are ever installed in exactly the same way.

This is especially evident with the installation of software packages. Almost every company exercises certain tailoring options during the installation of purchased software. This is one of the driving forces that moves architecture of purchased software packages to become more flexible, a further substantiation for the first rule of system evolution.

The second step is improvement through selection. Of the thousands of variations in the application of any system, certain variations demonstrate themselves as having more value than others — for example, the flexible architecture in purchased software mentioned above. These are the characteristics that have the greatest chance of surviving. The characteristics are selected and are available to be carried forward as the system evolves.

As both the age and size of a system increases, a phenomenon occurs: The prolonged growth results in corresponding change — an evolution. Most systems do not expand for two years and then deteriorate one year; rather, those that survive a crisis usually enjoy four to eight years of growth without a major setback or disruption. The term evolution seems appropriate for describing those quieter periods, because only modest adjustments appear necessary for maintaining growth.

Smooth evolution is not inevitable; it cannot be assumed that system growth is linear. During the last 20 years, the introduction of new technology has significantly affected the life expectancy of a system. Thus from numerous case histories, evidence is found of substantial turbulence spaced between smooth periods of evolution. These turbulent times are periods of revolution; they represent a serious upheaval, elimination or replacement of a system.

The traditional system cycle

For any one of a multitude of reasons, a system may experience a turbulent period — a system crisis. In this crisis, the user organization does the following:

• Outgrows its present system.
• Identifies an opportunity for cost reduction.
• Requires faster, more accurate, detailed information.
• Experiences a change in technology.
• Determines the system is no longer efficient.
• Discovers that the product is not supported by a software supplier.

As a result, a completely new system is designed. The task is tackled with the optimistic outlook that the existing system's ills can be overcome. The designers feel they are developing a lasting, durable product that will withstand the test of time — a finished product. Thus, this process is defined as the finished-product system.

Since there is no such thing as a utopian system, the conceptual finished-product system often takes up multiple man-years, ends up late or understated, is implemented in an atmosphere of trauma and goes through multiple specification iterations while causing turnover of users and MIS development personnel.

The most common pitfall, however, is to assume that there is no alternative to replacing the system. Replacing a system is rarely the *only* solution or the *best* solution for satisfying a system crisis. This is shown by taking a close look at the phases of the finished-product system development scenario (see chart above):

• A requirement definition phase, in which the requirements that the system must meet are determined, documented in detail and approved.
• A design phase, in which a physical solution to the requirements is determined. This phase usually proceeds from a general design to exact specifications for the construction of each system component.
• A development phase, in which the system is constructed, tested and verified. Recognizing that this is the most labor-intensive phase, it can be eliminated or greatly diminished through the use of purchased software or turnkey systems.
• An implementation phase, in which the transition is made from the current mode of operation, manual or automated, to the new system.
• A maintenance phase, in which the system is continually enhanced and revised to meet the ever-changing needs of users. This phase is always assumed to end, after overenhancement and many changes, with a catastrophic failure of the system after many changes followed by its replacement.

In broad terms, the finished-product system is defined as a fixed product developed to fixed specifications with a fixed life cycle. It assumes that the company evolves during the maintenance phase and that the system changes to reflect this evolution. Eventually, the fixed specifications of the system are subverted sufficiently to make the system ineffective. The problem is not that the specifications of the system evolve,

Manpower requirements for system development, by methodology

Classic "finished product" development cycle method

Manpower | Requirement | Design | Development | Implementation | Maintenance

Alternative "evolutionary" development cycle method

Manpower | Development | Maintenance | Operational Analysis | Maintenance

Since the development phase absorbs more manpower than any other phase in the life cycle of a system, companies can save money by reassessing their systems in an operational analysis and simply renovating or augmenting them rather than replacing them. Operational analysis consumes only 20% the manpower of development.

but that the architecture was designed without sufficient flexibility to permit evolution. The finished-product system assumes a fixed architecture; as the company evolves, the only solution to the evolution is revolution — replacement with a new system.

Alternatives

Replacement is rarely the only or the best alternative. Evolutionary alternatives include the following:

• Maintenance: changing the system to meet legal, organizational or strategic changes in the direction of a business.

• Renovation: changing the base system to add the new functions of the system while correcting technical deficiencies.

• Augmentation: changing the system to add new functions or to correct existing functions by building new features on top of, or around, the system.

Revolutionary alternatives are as follows:

• Replacement: elimination of a system and replacement with a purchased package solution or a finished-product solution.

• Elimination: discontinuation or gradual phasing-out of a system when it loses its business value.

During the evolutionary stage, no one ever thinks of replacing the system. During the revolutionary stage, most companies' knee-jerk reaction is to replace the system, when in fact they could renovate or augment. A classic example is the Ohio-based

food service company that spent $750,000 to replace a major financial system, only to realize that the new system was very similar to the old one. The old system could have been enhanced and augmented in less time and at considerably less cost.

New perspective

The first step to altering the replacement perspective is to define the system change process as an evo-

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Implementing an operational analysis

Implementation of an operational analysis consists of the following steps:

1. **Identify**
   • Source of the data and documents.
   • People who handle the documents.
   • Recipients of the output.
2. **Review** open MIS service requests.
3. **Interview** personnel.
4. **Define**
   • Paperwork flow.
   • Processing steps.
5. **Segment** processing into
   • Data receipt and preparation.
   • Data input and validation.
   • Automated processing.
   • Management and administrative activities.
6. **Document inputs**
   • Types of documents.
   • Samples of documents.
   • Volumes per time period.
7. **Document outputs.**
   • Types of reports.

• Samples of reports.
   — Manual reports.
   — Automated reports.
   — On-line queries.
8. **Determine** areas for improvement.
   • Data receipt and preparation.
   • Data input and validation.
   • Automated processing.
   • Management and administrative activities.
9. **Perform** a return-on-investment analysis.
   • Cost analysis to implement the remedial action.
   • Benefit analysis.
   • Return-on-investment calculation.
10. **Rank** improvements by priority.
   • First, by mandatory changes — those changes that improve the integrity or security of the system.
   • Second, by return-on-investment calculations.

— HOWARD MILLER

This evolutionary perspective can be achieved by evaluating the system's operation, a process hereafter described as an operational analysis.

An operational analysis identifies and defines the functions performed by a system in an operational environment. Its objectives are as follows:

• Identification and analysis of the objectives of the major functions involved in processing information.

• Identification of areas that need to be improved, that require unnecessary effort or that result in the loss of data integrity.

• Formulation of remedial actions.

• Identification of mandatory changes, which are necessary to resolve data security or data integrity problems.

• Calculation of financial or other benefits derived from remedial actions.

In addition to the quantitative, financial benefits derived from the remedial actions, the operational analysis results in qualitative benefits:

Knowledge of the system's functions is disseminated to a larger audience and therefore increases the level of awareness for the function of the system. Over time and because of staff turnover, much of the knowledge is lost despite documentation.

Conducting an operational analysis improves communication among various work groups. Through participation in the operational analysis, the involved personnel commit to improving the productivity of the overall system.

Last, by working together, **the attitude of the involved personnel improves**, and they find it easier to work together in the future.

The Ohio-based food service company performed an operational analysis on 13 of its major systems. The analysis showed both qualitative and quantitative benefits, and the chief financial officer was so pleased

that he presented a summary of the results to the company's board of directors.

The qualitative benefits were twofold. First, while evaluating the systems, the end-user departments became aware of existing but unused facilities. These unused facilities made the system more effective and the departments more productive. Second, some minor security and integrity problems were identified and resolved. However, the company was left confident that its internal controls were sound.

The quantitative results were even more substantial. For an investment of $90,000, the company was able to realize an annual saving of $250,000. Conversely, replacement would have cost well in excess of $3 million.

The payoff

When considering the qualitative and quantitative factors, it is evident that an operational analysis will positively affect the entire company rather than just an individual department, function or area, since it measures the overall effectiveness of a system.

Furthermore, by implementing all the changes that positively affect control and those that give the highest financial return, the greatest impact can be achieved with a minimum of expense. Typically, 80% of the return can be achieved with only 20% of the effort.

By periodically repeating the operational analysis process, a system's perspective can be changed to an evolutionary one — a dynamic view that evolves as the strategies of the company evolve. The result is a modification of the development cycle, (see chart page 73) extending the life of the system beyond the perceived life span.

Exerting a small incremental expenditure of time and monies — approximately 20% of the development phase costs — allows the system's evolution to be altered to correlate with the direction of the company. Instead of replacement, the life of the system can be extended through selective maintenance, renovation or augmentation.

The evolutionary system development process significantly forestalls the need for replacing existing systems with new systems.

By using operational analysis to evaluate an existing system before it reaches maturity and a crisis develops, an organization can significantly extend the system's life. This facility can also be a key tool for reducing the development backlog of a company.

Furthermore, the operational analysis process not only provides the opportunity to extend the life of a system but also provides immediate qualitative returns in the form of better utilization and understanding of the systems, along with quantitative returns when the system changes are carried through to their fruition. ■

> **"**
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> *Exerting a small, incremental effort in time and monies allows the system's evolution to be altered to correlate with the direction of the company.*

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MANAGEMENT

Users tune in IBM network

By Jean S. Bozman

CHICAGO — Many IBM customers are finding they can attend the company's instructional classes closer to home than they thought. This is because Big Blue's satellite broadcast system beams classes on such topics as software systems and communications to dozens of classrooms nationwide.

The Interactive Satellite Education Network (ISEN) system has been in place for three years, but many customers still do not know about it. In many cases, the classes are available at no cost to IBM customers. This fall, ISEN will be extended to Detroit and Philadelphia, bringing the number of cities that receive the programs to 14. Classes can be broadcast from eight cities.

Only a few other videoconferencing facilities rival ISEN's size. AT&T, in association with nine Hilton Hotel Corp. hotels, offers a nationwide broadcasting hookup, and Holiday Inns, Inc. provides another nationwide videoconferencing system. The difference is that IBM, with its vast resources, provides its own internal broadcasting network of 60 instructors and 70 class topics.

The ISEN system allows an instructor to be his own producer, editor and engineer, providing controls at a single desk that operate the cameras, create graphics and poll student responses to questions. A touch screen gives ISEN's instructors the ability to quickly choose a combination of media devices to keep the class interesting.

In the classroom, students watch two 19-in. Sony Corp. color TV monitors, one broadcasting a live picture of the instructor's head and shoulders, the other carrying graphics, slides or diagrams. To keep things moving during the class sessions, which can last all day, IBM has ISEN instructors trained by TV consultants. One technique for maintaining

Bozman is a Computerworld *contributor based in Chicago.*

Multivendor link speeds data delivery at Fairchild

By Ninamary Buba Maginnis

PUYALLUP, Wash. — Getting computers from different vendors to talk to each other is rarely easy. As Terry Huffman will attest, moving financial data from an IBM mainframe onto a Digital Equipment Corp. manufacturing system was no exception.

During the past year, Huffman, a systems engineer with Fairchild Semiconductor Corp., faced the task of developing an easier way to move the financial information to his division's factory floor. An operator had been copying the financial data onto a backup tape each night and hand-carrying it to the manufacturing department for use the next day.

Fairchild's Memory and High Speed Logic Division makes integrated circuits on silicon wafers. A wafer's worth increases as it advances through the manufacturing process. The manufacturing staff tracks each wafer's changing value

Fairchild's Huffman

and files daily output reports.

"The tapes were inefficient and totally unsatisfactory," Huffman says. "The information was late or out of date once you transferred it over to the other system. It was not real-time, and it was operator-intensive.

"Some people had two terminals at their desk," he adds. "Essentially, there would have to be some very efficient and transparent way of communicating between the two different worlds."

The division's financial people also required data from the manufacturing system.

Last fall, Fairchild asked to become a beta-test site when DEC demonstrated its new Vax-to-IBM Data Access (VIDA) networking software. "It was something already written to do what we wanted to do — access the IBM machine for the VAXs," Huffman says.

DATA VIEW

Workers' compensation
Civilian pay scale outweighs military in all but one category.

Job	Compensation (annual)		
	Military	**Civilian**	**Difference**
Computer Operator I	$16,308	$13,231	+ $3,077
II	16,285	16,541	- 256
III	18,432	19,990	-1,558
Programmer/Programmer Analyst I	15,828	20,049	-4,221
II	15,881	23,100	-7,219
III	17,181	27,498	-10,317
IV	22,965	32,328	-9,363
V	30,135	39,354	-9,219
Computer Systems Analyst I	23,272	25,696	-2,424
II	26,898	30,288	-3,390
III	26,898	35,346	-8,448

Information provided by U.S. General Accounting Office report on military compensation (GAO/NSIAD-86-113), June 1986

INSTANT ANALYSIS

"You're not going to cost-justify strategic [information systems] initiatives. I believe if we run corporations on return on investment, we'll drive them into the ground."

— M. Victor Janulaitis, president, Positive Support Review, Inc., Los Angeles

Micros aid in lay-off management after Wells Fargo merger

Systems put together severance packages

By Jeffry Beeler

SAN FRANCISCO — A large bank that last June swallowed a chief competitor recently integrated several multiuser microcomputer products to meet an internal systems emergency, a situation the institution found impossible to address through conventional mainframe technology.

Sources at Wells Fargo Bank, NA, which recently acquired Crocker National Bank, see no reason why, in theory, mainframe development tools would have been less effective than microcomputer modules for creating its Displacement Support System (DSS), which was designed to help manage the thousands of layoffs caused by the merger.

But in practice, Wells' MIS organization was already preoccupied with so many other takeover-related computing matters that it could play only a supporting role in the system's implementation, according to DSS project manager Stephanie McAuliffe.

Moreover, with a mainframe and a typical large systems data base package, the bank would probably have needed a year to complete the development effort, which required a two-month turnaround time, according to independent DP contractor Andrew Amstutz.

Given its unenviable constraints, Wells had little choice but to off-load its DSS implementation work to outside professionals. In the end, the bank awarded its systems contract to Amstutz's locally headquartered firm, Amstutz, Lynch & Associates, Inc., which chose Ashton-Tate's Dbase III Plus as its main development tool.

Use of microcomputer technology as the system's key building blocks, Amstutz reasoned, offered the bank its only realistic hope of finishing the development project on time.

Subsequent events ultimately vindicated Amstutz's judgment. Starting from scratch and working under severe deadline pressures, his staff developed the DSS and made it operational within 60 days — to the surprise and delight of his clients. "This project was the first time in my memory that a system has been com-

pleted without a delay," McAuliffe said.

Built around a local network of six IBM Personal Computer ATs, the system was designed to do two main jobs. One is to produce letters of notification for the hundreds of Crocker and Wells employees who have already lost their jobs as a result of the takeover and for the thousands of others who face a similar fate.

During the two months between the time the acquisition won federal approval and the time it took effect on June 2, Wells earmarked some 1,600 redundant jobs for elimination. All the employees who were affected by the bank's decision had to be formally notified on the day the union was consummated.

EVERY DEPARTMENT RUNS

Introducing the New MICROLINE® 190 Plus and 290 Series.

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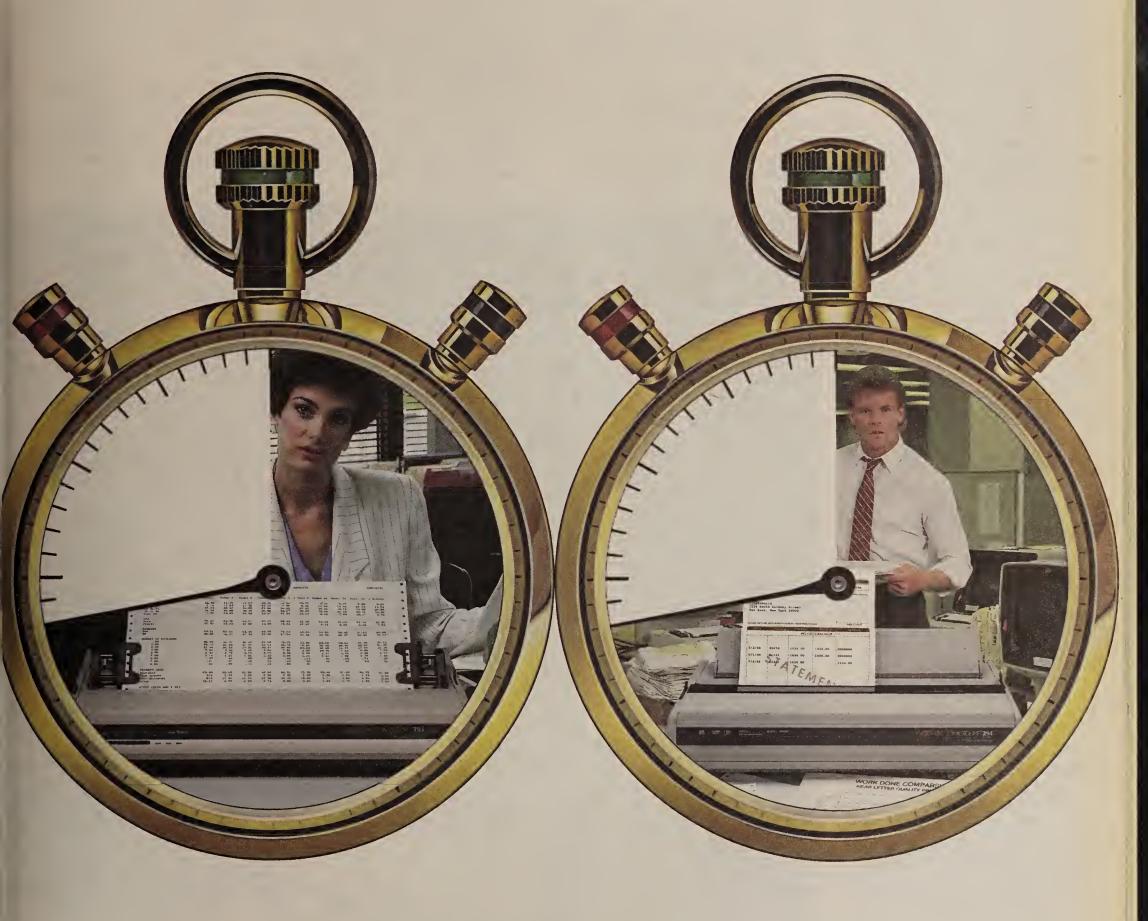
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MANAGEMENT

SEPTEMBER 21-27

Bank EDP Audit Conference. Atlanta, Sept. 21-24 — Contact: Bank Administration Institute, 60 Gould Center, Rolling Meadows, Ill. 60008.

Electronic Computing Health Oriented. Palm Beach, Fla., Sept. 21-24 — Contact: St. Luke's Samaritan Health Care, Inc., 3000 W. Montana Ave., Milwaukee, Wis. 53215.

National Retail Merchants Association's 28th Annual Retail Information Systems Conference. Anaheim, Calif., Sept. 21-24 — Contact: J. Joseph Miller, Director of Retail Standards and Technology, NRMA, 100 W. 31 St., New York, N.Y. 10001.

Sixth Annual Conference on Control, Audit & Security of IBM Systems. Boston, Sept. 21-25 — Contact: MIS Training Institute, 4 Brewster Road, Framingham, Mass. 01701.

Eighth Annual Lasers in Graphics/Electronic Publishing in the 80's Conference. Anaheim, Calif., Sept. 21-29 — Contact: Lasers in Graphics, Suite 1, 1855 E. Vista Way, Vista, Calif. 92084.

Datastorage 86. San Jose, Calif., Sept. 22-24 — Contact: Forum Management, Cartlidge & Associates, Inc., Suite M259, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

1986 World Congress on the Human Aspects of Automation. Long Beach, Calif., Sept. 22-24 — Contact: Public Relations Department, Society of Manufacturing Engineers, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

Corpcon '86, Corporate Microcomputer Exposition and Technical Conference. Los Angeles, Sept. 23-25 — Contact: Corpcon, P.O. Box 3727, Santa Monica, Calif. 90403.

Fourth Annual NCR Users Eastern America Conference. Atlantic City, Sept. 25-26 — Contact: ECUO Treasurer/Convention Publicity Chairman, c/o AOR, Inc., P.O. Box 429, Willow Grove, Pa. 19090.

Fourth Personal Computer Faire. San Francisco, Sept. 25-27 — Contact: The Interface Group, Registration Department, 300 First Ave., Needham, Mass. 02194.

Association for Women in Computing's Fifth Annual Conference. St. Louis, Sept. 26-28 — Contact: AWC Conference '86, 407 Hillmoor Drive, Silver Spring, Md. 20901.

SEPT. 28-OCT. 4

1986 Society for Information Management Annual Conference. Dallas, Sept. 28 to Oct. 2 — Contact: 1986 SIM Annual Conference, P.O. Box 7030, Chicago, Ill. 60680.

National Communications Forum. Chicago, Sept. 29 to Oct. 1 — Contact: NCF, 505 N. Lake Shore Drive, Chicago, Ill. 60611.

Performance/Capacity Management Tutorial Week. Monterey, Calif., Sept. 29 to Oct. 2 — Contact: The Institute for Information Management, Suite 230, 1901 S. Bascom Ave., Campbell, Calif. 95008.

Institute on Artificial Intelligence and Expert Systems. Chicago, Sept. 29 to Oct. 3 — Contact: Joan Merrick, Seminar Coordination Office, Suite 415, 850 Boylston St., Chestnut Hill, Mass. 02167.

Products '86. Dallas, Sept. 30 to Oct. 1 — Contact: Future Computing, Inc., 8111 LBJ Freeway, Dallas, Texas 75251.

Fifth Annual Corporate Electronic Payments Conference. New York, Oct. 1-2 — Contact: George C. White, White Papers, Inc., 95 Gordonhurst Ave., Upper Montclair, N.J. 07043.

Financial Networks Workshop. Chicago, Oct. 1-2 — Contact: American Bankers Association, 1120 Connecticut Ave. NW, Washington, D.C. 20036.

CD-Interact '86. Chicago, Oct. 1-4 — Contact: Microtrends, Inc., Suite 730, 650 Woodfield Drive, Schaumburg, Ill. 60173.

First National Desktop Publishing Trade Show. Chicago, Oct. 2-3 — Contact: Personal Publishing Show, P.O. Box 390, Itasca, Ill. 60143.

OCTOBER 5-11

VSAT Expo '86. Washington, D.C., Oct. 6-8 — Contact: Telestrategies, 1355 Beverly Road, McLean, Va. 22101.

Information Management Exposition & Conference. New York, Oct. 6-9 — Contact: Cahners Exposition Group, P.O. Box 3833, 999 Summer St., Stamford, Conn. 06905.

Tenth International Fiber Optic Communications and Local Area Networks Exhibition. Orlando, Fla., Oct. 6-10 — Contact: Cheryl MacDonald, Exhibit Coordinator, Information Gatekeepers, Inc., 214 Harvard Ave., Boston, Mass. 02134.

Computer and Communications Security '86. New York, Oct. 7-9 — Contact: Robin Schmidt, Cahners Exposition Group, Box 5060, 1350 E. Touhy Ave., Des Plaines, Ill. 60017.

PC Expo. Chicago, Oct. 7-9 — Contact: 333 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Dexpo West 86 Show. San Francisco, Oct. 7-10 — Contact: Expoconsul International, Inc., 3 Independence Way, Princeton, N.J. 08540.

National Conference on Factory Automation. Southfield, Mich., Oct. 7-10 — Contact: Software Career Link, 15 Olde Boston Square, 270 Littleton Road, Westford, Mass. 01886.

Seybold Group's Conference on Desktop Communications. San Francisco, Oct. 9-11 — Contact: The Seybold Group, Suite 132, 20695 Western Avenue, Torrance, Calif. 90501.

MANAGEMENT

OCTOBER 12-18

Computer-Aided Manufacturing-International's 15th Annual Meeting and Technical Conference. San Antonio, Oct. 14-15 — Contact: Computer-Aided Manufacturing-International, Inc., Suite 1107, 611 Ryan Plaza Drive, Arlington, Texas 76011.

National and Federal Office Automation Conferences. Washington, D.C., Oct. 14-17 — Contact: NOAC, P.O. Box N, Wayland, Mass. 01778.

OCTOBER 19-25

Technetron '86. Boston, Oct. 19-22 — Contact: Wang Laboratories, Inc., Mail Stop 1935, One Industrial Ave., Lowell, Mass. 01851.

Third-Party and Self Maintenance Conference. New York, Oct. 20-21 — Contact: Frost & Sullivan, Inc., Department RE-828 E, 106 Fulton St., New York, N.Y. 10038.

Unixexpo. New York, Oct. 20-22 — Contact: National Expositions Co., Suite 12A, 49 W. 38 St., New York, N.Y. 10018.

Infomatics '86. Toronto, Oct. 20-23 — Contact: International Information Management Congress, P.O. Box 34404, Bethesda, Md. 20817.

American Production and Inventory Control Society, Inc. 29th Annual International Conference and Technical Exhibit. St. Louis, Oct. 20-24 — Contact: APICS, 500 W. Annandale Road, Falls Church, Va. 22046.

Electronic Linkage of International Markets. New York, Oct. 21 — Contact: Waters Information Services, Inc., P.O. Box 2248, Binghamton, N.Y. 13902.

Software Configuration Management and Software Quality Assurance. Santa Maria, Calif., Oct. 22-24 — Contact: Software Certification Institute, P.O. Box 2328, Santa Maria, Calif. 93455.

Tenth Annual Data Entry Management Association Conference and Equipment Exposition. Las Vegas, Oct. 22-24 — Contact: DEMA, 750 Summer St., Stamford, Conn. 06901.

Seventh Annual Computer Law Institute. New York, Oct. 23-24 — Contact: Law & Business, 855 Valley Road, Clifton, N.J. 07013.

OCT. 26-NOV. 1

Digital Document Automation: The Emerging User. Reston, Va, Oct. 26-28 — Contact: Institute for Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02115.

International Data Corp.'s MIS Executive Conference. Palm Springs, Calif., Oct. 26-29 — Contact: IDC, 5 Speen St., Framingham, Mass. 01701.

Fifth World Congress on Medical Informatics. Washington, D.C., Oct. 26-30 — Contact: George Washington University Medical Center, Office of Continuing Medical Education, 2300 K St. N.W., Washington, D.C. 20037.

Annual Teleconferencing Users Conference. Anaheim, Calif., Oct. 27-29 — Contact: Applied Business Telecommunications, Box 5106, San Ramon, Calif. 94583.

Data Processing Management Association Annual Computer Conference and Business Exposition. Atlanta, Oct. 27-29 — Contact: Conference and Meetings Manager, DPMA International, 505 Busse Highway, Park Ridge, Ill. 60068.

Hammer Forum 86. Cambridge, Mass., Oct. 27-29 — Contact: Hammer and Co., Five Cambridge Center, Cambridge, Mass. 02142.

Distribution Computer Expo '86 East. Parsippany, N.J., Oct. 29-30 — Contact: C.S. Report, Inc., P.O. Box 453, Exton, Pa., 19341.

Association of Public Data Users 11th Annual Conference. Washington, D.C., Oct. 29-31 — Contact: APDU, 87 Prospect Ave., Princeton, N.J. 08544.

Computer Dealers and Lessors Association Annual Meeting. Colorado Springs, Oct. 30 to Nov. 1 — Contact: CDLA, 1212 Potomac St. N.W., Washington, D.C. 20007.

NOVEMBER 2-8

ADAPSO 65th Management Conference. Phoenix, Nov. 2-5 — Contact: ADAPSO, Suite 300, 1300 N. 17th St., Arlington, Va. 22209.

Fall Joint Computer Conference '86. Dallas, Nov. 2-6 — Contact: FJCC '86, 1730 Massachusetts Ave. N.W., Washington, D.C. 20036.

Automated Manufacturing Exhibition and Conference. Greenville, S.C., Nov. 3-6 — Contact: P.O. Box 5616, Greenville, S.C. 29606.

Electronic Imaging '86. Boston, Nov. 3-6 — Contact: MG Expositions Group, 1050 Commonwealth Ave., Boston, Mass. 02215.

Long Range Information Systems Planning. Washington, D.C., Nov. 3-6 — Contact: American Management Association, 135 W. 50th St., New York, N.Y. 10020.

Advancing Standards Technology for Distributed Information and Telecommunications Systems. Boston, Nov. 3-7 — Contact: Omnicom, Inc., Suite 304, 501 Church St. N.E., Vienna, Va. 22180.

North American Telecommunications Association Convention & Exhibition Showcase. St. Louis, Nov. 5-7 — Contact: NATA, Suite 550, 2000 M St. N.W., Washington, D.C. 20036.

Scientific Computing & Automation Conference and Exposition. Atlantic City, Nov. 5-7 — Contact: Expocon Management Associates, Inc., 3695 Post Road, Southport, Conn. 06490.

Second Annual Conference on Optical Storage for Small Systems. Los Angeles, Nov. 5-7 — Contact: Technology Opportunity Conference, 256 Laguna Honda Blvd., San Francisco, Calif. 94116.

Retire Your PC

The PC-to-host coax connection. She was a good piece of equipment working with coax cable and cluster controllers, but time just passed her by. End users started needing more than simple host access. They also needed their PCs to share resources around the office. That's when local area networks came along to fill the need.

LANs are dramatically increasing office productivity through efficient information management. And Gateways are exploiting LAN versatility by providing cost-effective host communication for PCs and other network devices. Now for thousands of dollars less, LANs and

Gateways provide PC-to-PC and PC-to-host communications all without a cluster controller.

INS Gateway PC Adapters are engineered around proven INS SNA 3274 cluster controller emulation. A single INS Gateway PC Adapter in an IBM NETBIOS compatible LAN, including Token Ring, will support up to 32 logical unit sessions. The LAN allows each PC on the network to share disks, printers and other resources while the Gateway allows performance of any host-supported function and maintains host access.

INS planned on PCs becoming a major component in the development of information

Coax Connection

MANAGEMENT

Jack Moshman, president of consulting firm Moshman Associates, Inc. of Bethesda, Md., has been elected president of the American Federation of Information Processing Societies (AFIPS).

Moshman, a statistician, is an officer of the Association for Computing Machinery, one of AFIPS' member organizations. He was a founder of AFIPS and has served on its board of directors and numerous committees.

Also elected AFIPS officers for the next year were **Rolland B. Arndt** of Sperry Corp., vice-president; **Arthur C. Lamb** of Procter & Gamble Co., secretary; and **Seymour Wolfson** of Wayne State University, treasurer.

President Moshman

■

Richard J. Mihelcic has been appointed director of the operations division in the office of the chief counsel of the Internal Revenue Service. Mihelcic's responsibilities will include recruiting, office computerization, training, personnel, budgeting, financial management and management information systems.

He will also advise the chief counsel and deputy chief counsel in planning and carrying out the legal functions of the IRS. Previously, he served as the assistant director of the operations division.

Mihelcic joined the IRS in 1975 in the general legal services division of the office of the chief counsel and was named branch chief in 1980.

■

Thomas N. Pyke Jr. has been appointed assistant ad-

ministrator of the National Oceanic and Atmospheric Administration (NOAA) for satellite, data and information services.

Pyke will be responsible for directing NOAA's civil operational environmental satellite program and managing an extensive system of environmental data collection and distribution centers. He will also be in charge of making NOAA's information resources more useful to the public.

NOAA's Pyke

Previously, Pike was director of the Center for Programming Science and Technology at the Department of Commerce's National Bureau of Standards.

■

Anthony M. Joseph has been appointed senior vice-president of MIS for McCrory Stores, a division of McCrory Corp. of York, Pa.

In his new position, Joseph will be responsible for all management information systems functions, including

the planning and development of new systems.

For the past 10 years, Joseph has been national industry director for retailing at the accounting firm of Deloitte Haskins & Sells, where he coordinated all of the company's retail-related activities.

Prior to joining Deloitte Haskins & Sells, he held systems management positions with Eaton's of Canada and Montgomery Ward & Co.

MANAGEMENT

Link speeds data delivery

The division of Fairchild, a subsidiary of the New York- and Paris-based Schlumberger, Ltd., opted to purchase the software after completing the beta test.

"In the long run, it made everybody's job easier. They can have information that is more timely," says Huffman, who declines to comment on other solutions that were considered. "Because it's automated, we no longer have to divert our operators' attention to trading tapes," he adds. "They can spend time on more productive issues."

Huffman cannot give specific figures on savings but says the software cuts down labor overhead. "The money that's saved is more of an indirect savings, more of a result of improved performance of the employee," he adds.

VIDA users cannot write up to the IBM data base, so financial information remains secure, Huffman claims. Only authorized personnel can access specific data base information.

End users, programmers and technical staff find the product transparent, according to Huffman. "As far as end users go, they don't know one way or the other.

They just know the report is coming out," he says.

Programmers need to know only one line of code to invoke the VIDA data base, and the IBM system staff required no additional training.

"I'm the only one who needs to know anything — for troubleshooting or fine-tuning or whatever else," Huffman says. "I certainly don't want to train staff to do a job or to learn something they didn't know before.

That would increase lead time."

The division maintains financial and marketing information on an IBM 4381 Model 1 while controlling manufacturing with VAX minicomputers — three VAX 8600s, three VAX-11/785s and a VAX-11/780 working in concert with six PDP-11s and several Microvaxes and Vaxstation Is and IIs.

VIDA software requires a Systems Network Architecture (SNA) gateway and Cullinet Software, Inc.'s Information Center Management System. Luckily, the Fairchild facility already had both components in place, so Huffman was able to install the networking software in less than two days.

"We were able to get the

> **"**
>
> *'Because it's automated, we no longer have to divert our operators' attention to trading tapes. They can spend time on more productive issues.'*
>
> — Terry Huffman
> Fairchild Semiconductor Corp.

program working in the matter of time it took to load it on the system," Huffman says, so the manufacturing staff could use the system immediately. "The data base administrator on the IBM system essentially had to create a folder for me, for testing. I was just like any other user on the system."

Now manufacturing supervisors and managers ask for financial information from their VAX terminals. The networking software sends the request through the SNA gateway, where Cullinet software translates the message, retrieves requested data and sends it back through the gateway.

When data base information arrives at the VAX system, the software automatically converts it to a usable VAX format.

Huffman claims the networking software delivers timeliness that is critical to managing the division's operations. "We don't do all that many ad hoc queries, but we got it down to minutes," he says.

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FEATURES	TVI 955	WY-50	WY-50+
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Optional Graphics model	Yes	No	No
Dynamically allocated non-volatile function key memory	512	128	140
Maximum non-volatile bytes per function key	256	4	64
High contrast super dark Matsushita screen	Yes	No	No
List price	$629	$599	$699

and necks feel a lot better.)

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MANAGEMENT

Users tune in IBM network

interest is to use changing voice inflection as a substitute for the walking and pointing done at traditional classroom blackboards.

"You can't just be a talking head," says Chicago-based ISEN instructor Don Bittner. "It takes more concentration, more energy on the part of the instructor, to keep reaching out to the students, as opposed to lecturing to them."

ISEN is targeted at IBM customers, particularly programmers for intermediate and large systems. The customers account for two-thirds of those in the classes; the remainder are IBM staff members who use the network to learn about new products or to be briefed on systems-level products, such as the IBM 3090 and its MVS/XA software.

Scheduling

Because it takes a considerable amount of time to orchestrate a national class, sessions are scheduled months in advance. Some classes run one or two days, while others stretch out to a week.

To keep classes small, IBM provides groups of rooms that hold eight students each.

"You might have 150 to 200 people listening in on a given class," says Gerald B. Quaid, senior instruction manager for IBM's Chicago broadcast center. "But each student would be in a classroom with no more than seven other people. That way, we can keep the sessions informal."

The system was not intended as a teleconferencing system, Quaid says. But it can work that way if IBM wants, on the day before a product announcement, for example.

"For our customers, it does cut down on travel," Quaid says. The system also prevents delays and hazards caused by weather. It has let customers in blizzard-bound Chicago attend a New York class without even driving to O'Hare International Airport.

Don Brian, marketing manager for Uccel Corp.'s UCC8, had to fly from Dallas to Houston to attend a class, but nevertheless says the session on "Problem and Change Management Systems" was productive.

"The entire class, which lasted two and a half days, was very efficiently run, and a stopwatch on screen let us know exactly when we had to be back in our seats from a coffee break," Brian says.

"Considering the obstacles the instructor had to overcome — he couldn't see anyone's face in the class — he did a very professional job," Brian concludes.

Students ask questions by pressing buttons instead of raising their hands. Once recognized, they ask questions through microphones on their desks. A care package of instructional materials, notebooks and pens is shipped to the remote sites to help students follow the instructor.

'Invisible' students

Because students are not visible to the instructor, they could discuss the material during polling breaks, Brian says.

"You couldn't do that in a regular classroom, because it would be too

disruptive," he notes. His only complaint is that the two-way voice communications were delayed 4 to 5 seconds due to the signals being broadcast via the satellite.

ISEN works by beaming encrypted signals from the IBM facilities to a single transponder on a Hughes Aircraft Co. Galaxy II satellite launched in 1983.

A series of NEC Corp. computers, designed for this purpose, convert the television signals into compressed digital signals. That means that the video monitors update only new information on the video channel, cutting down the bandwidth required for the broadcast.

IBM turned to Hughes Communications, Inc., a Hughes Aircraft subsidiary, to provide the video solution in 1983. It was Hughes' decision to outfit ISEN with Japanese systems, in-

cluding the NEC computers, Sony monitors and JVC video equipment.

A single system engineer operates the NEC system at each broadcast site and assists instructors who run into broadcast trouble.

Other companies, many of them IBM customers, have expressed an interest in setting up their own version of ISEN, only to be discouraged by price. "Some companies have looked to duplicate it," Quaid says, "but it's too expensive." IBM declined to specify the system's cost.

Topics in demand

The topics most in demand are tutorials on specific operating systems, including MVS, VM and DOS/VSE, as well as system facilities, such as the VTAM teleprocessing monitor, the IMS data base manager and the Distributed Office Support Systems of-

fice automation environment. Instruction on conversions from one operating system to another is also common.

IBM sometimes includes instruction time as part of a customer's purchase contract; other classes are free.

The broadcasting centers are in New York, Chicago, Washington, D.C., Los Angeles, San Francisco, Dallas, Houston and Minneapolis. Sites in Boston, Atlanta, St. Louis and Hartford, Conn., can only receive the classes.

Scheduling national broadcasts is not easy, according to Quaid. "The Midwest and the East Coast work together," he says. But sometimes, if the topic is important enough, those on the West Coast join in too, coming to classrooms slightly bleary-eyed at 6:30 a.m. to catch a live broadcast from New York.

MANAGEMENT

Micros aid in merger layoffs

However, most of the system's letter-writing activities still lie ahead. By the end of 1987, the number of additional takeover-related layoffs will total 3,400, all of which will also require official notifications, McAuliffe said.

The DSS's other major job is to help Wells manage the package of postemployment support services offered to each of the 5,000 workers who will eventually be displaced.

In particular, the system automates the process of assigning dismissed employees to occupational counseling workshops, job placement sessions and resume-typing services.

To make the system work, the contents of the two banks' personnel and benefits data bases first had to be normalized. "We had to make sure, for example, that both sets of data had identical data descriptions," Amstutz said.

Most of the data conversion burden was born by Crocker's and Wells' internal MIS staffers, who labored "14-hour days, seven days a week to help us get our system up and running on time," McAuliffe said.

After information from the displaced employees' personnel and benefits files was extracted from the two banks' data bases and was normalized, it was downloaded to a PC AT that acts as the DSS's dedicated file server.

> **One of the DSS's major jobs is to help Wells manage the package of postemployment support services.**

"We were forced to merge the data from the two banks because, although both use IBM mainframes, they have very different operating environments," Amstutz maintained.

Having used the raw information and Dbase III Plus to create a microcomputer-resident data base, Amstutz's staff then connected the file server to the other five PC ATs through Novell, Inc. software and 3Com Corp. hardware. All the local network's building blocks were off-the-shelf components.

Using the five PC AT-based workstations, the DSS's operators can now gain access to the network's file server and retrieve selected facts to incorporate in the bank's formal dismissal notices. "We can go electronically into an employee's personnel history and, based on his length of service and job title, can calculate his severance pay," McAuliffe said.

Operators also use their workstations to book or change appointments for employees who call the DSS center to enroll in the bank's counseling and placement services. Amstutz likened the system's scheduling capabilities to an airline reservation system.

OFF THE PRESS
David Ludlum

BOOK REVIEWS

SUPERVISING TECHNICAL AND PROFESSIONAL PEOPLE
By Martin Broadwell
And Ruth Sizemore House

Training is not a luxury but a "profit-making, money-saving part of the operation," according to the authors of *Supervising Technical and Professional People*. Companies should therefore have a policy that supports training, specifying who gets trained, what training they get and when.

That philosophy underlies the authors' approach to supervising technical and professional employees, which focuses on how managers should handle specific situations they are likely to confront.

The authors take a case-study approach, stressing a conversational tone and illustrating various issues in the supervision of technical professionals with examples from a fictional manufacturer, Broadhouse, Inc.

Topics covered include communication with nontechnical people, team building, managing stress, motivation, delegation, leading meetings, training, negotiating and handling the poor performer.

Approaches for dealing with these issues are spelled out in step-by-step instructions. Emphasis is on the need for supervisors to deal with employees' emotions as well as their skills, according to the authors. They argue that, although people are not always logical, it is possible to use logic in handling them.

The presentation is aided by brief outline summaries that are sprinkled throughout the text and then collected at the ends of chapters and in an appendix.

Broadwell is a former Bell System executive who conducts in-house training and sells audio-visual training materials. House has conducted training seminars for AT&T, Gulf Oil Corp. and the U.S. Army and Navy.

Hardcover, 279 pages, $24.95, ISBN 0-471-81785-6, Wiley Interscience, a division of John Wiley & Sons, Inc., 605 Third Ave., New York, N.Y. 10158.

MANAGEMENT

Q *My company is upgrading its computer-aided design (CAD) capabilities by installing the next generation of CAD equipment. Our in-house expertise is dated, and we know we need help in the selection, implementation and application of the hardware.*

We narrowed the field down to two consultants. One is a full-time computer-aided design and manufacturing consultant, and the other is an engineering professor who does consulting on the side.

The people involved with the pro-ject are impressed by the professor, but the amount of time he can devote to us is limited. All of us agree that he is just the person we need.

On the other hand, the professional consultant is willing to make a total commitment to our project. We think he can eventually do the job, but his credentials fall short of the professor's, and he has an apparent lack of knowledge in certain areas.

My boss prefers the professional consultant because of his expressed commitment and, possibly, because his fee is about $200 a day less than the professor's.

Have other companies been satisfied with their part-time professor consultants?

I would always opt for a little very good advice and guidance over a lot of mediocre advice and guidance.

Hire the professor; the tone of your letter implies that you would never be satisfied with the professional consultant. An effective client/consultant relationship demands that the client have confidence in its consultant.

The best consultants take steps to ensure that the client is part of, and benefits from, the learning curve. The full-time consultant's "total commitment" indicates to me that the expertise garnered during this project may walk out the door when the consultant's contract is terminated.

Q *One of our vice-presidents recently returned from a week-long seminar and asked if we had a decision support system.*

I asked him if he could be more specific, and he said, unfortunately, *that he could not.*

Apparently, the seminar leaders told a group of executives that a decision support system would, in essence, provide them with the most up-to-the-minute information in any given format at any given time. We are good, but we're not that good.

I believe that some of these executive seminars do more harm than good. They give the people in attendance unrealistic impressions of the capabilities of a typical computer center. Do you agree?

I agree that the much-ballyhooed term decision support systems (DSS) is routinely abused. People who write and talk about decision support systems tend to imply that all someone has to do to ascend to information heaven is install one.

Of course, the implementors know that it is not that simple. It is much easier to put the burden of explanation (and implementation) on an MIS department.

DSS is another one of those terms, like minicomputer, that means different things to different people. The typical end user would be better served if we referenced specific decision support tools: fourth-generation (query) languages, electronic spreadsheets, business graphics, linear programming models, expert systems and so on.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services.

MANAGERS from page 84

Wayne J. Sadin has been appointed vice-president of information systems for Murray Financial Corp. of Dallas. His responsibilities include corporate data processing, voice and data communications, office automation and personal computing. Sadin was senior vice-president of information systems at Murray Savings Association, a subsidiary of Murray Financial Corp.

■

Wayne Marsh has been appointed assistant vice-president of Management Information Systems at Nashville Gas Co. He began with the company in 1969 in the credit office and became involved in computer operations in 1974. He most recently served as the director of MIS.

■

Anthony G. Beresford has been named director of systems development for Grand Union Co. of Elmwood Park, N.J. In his new position, he will be responsible for all computer systems development for Grand Union's 371 stores. He will report to William E. Kinslow, corporate vice-president in charge of MIS. Previously, Beresford served as manager of systems development for Mercantile Stores in New York.

■

Richard T. C. LeFave has been elected vice-president in the Systems Analysis Department of Baybanks Systems, Inc., the data processing subsidiary of Baybanks, Inc. of Boston. LaFave, who joined Baybanks this year, is responsible for analysis of new and existing systems, the information center and support to customers on existing systems. He previously worked with Boeing Computer Services Co. and Nixdorf Computer Corp.

NEW PRODUCTS

Software puts the brakes on PC cursors

Revolution Software, Inc. of Randolph, N.J., has introduced Cruise Control, a random-access memory-resident program that reportedly eliminates cursor run-on problems on IBM Personal Computers and compatibles.

Cruise Control has an antiskid braking feature that senses the rate at which an application program can accept keystrokes and then adjusts the autorepeat rate to match, eliminating the cursor's tendency to continue moving after the cursor key has been released, a company representative said. With this, the cursor stops immediately after the key is released.

Cruise Control also has a screen runner feature that increases cursor speed by a factor of 3 to 5, a company spokesman said. This feature reportedly allows the cursor keys in IBM's Displaywrite III, Microsoft Corp.'s Microsoft Word, Ashton-Tate's Multimate and Wordperfect Corp.'s Wordperfect to perform like those on dedicated word processors. The cursor speed is adjustable.

Also included is a feature that allows the user to repeat any key without having to hold it down. According to the vendor, this feature is designed to let users review large spreadsheets, lengthy documents or lists of data base records, hands free. The cruise speed is adjustable, and any key stops the repetition.

Other features included with Cruise Control are a dimmer switch and autodimmer. The dimmer switch dims the display screen under keyboard control, allowing users privacy while using the computer. The autodimmer switch dims the display screen automatically after a programmable time delay that can be set anywhere between one and 60 minutes.

Cruise Control is priced at $29.95. It requires an IBM PC, Personal Computer XT, AT or compatible running IBM's PC-DOS 2.0 or higher. It also requires one of the following video adapters: IBM's Monochrome Display Adapter, Color Graphics Adapter or Enhanced Graphics Adapter, AT&T's PC 6300 or graphics cards from either Compaq Computer Corp. or Hercules Computer Technology, Inc.

Voice processing system out

Dictaphone desktop mixes dictation, messaging on PC

A voice processing system that integrates telephony, dictation and transcription, text and voice messaging and computer intelligence has recently been released by Dictaphone Corp., a Pitney Bowes company based in Rye, N.Y.

Called Connexions, the desktop system utilizes an intelligent telephone and interfaces with the IBM Personal Computer or compatibles. The system has four connecting modules: the Connexions telephone, the display recorder, the computer and Connexions-related software. Pricing for the system starts at $915 and is based on the configuration. The telephone costs $695, and the software and computer are priced separately.

The telephone is said to allow users to electronically file, access and speed-dial up to 100 names and telephone numbers from a personal directory. Its display provides information on the date, time, phone number and length of each call along with the name of the called party.

The display recorder reportedly offers dictating capabilities and voice recording. A user can dictate directly into the telephone handset or can dictate hands-free by using the system's voice-activated recording, voice-sensor feature. When the telephone is combined with the display recorder, it functions as a built-in telephone

Connexions telephone and display recorder

answering system, a spokesman said.

According to the vendor, the Connexions voice processing system interfaces with the Connexions computer or with an IBM PC or compatible to form a complete system network. With the computer and the Connexions network manager software, up to 16 Connexions voice processing systems can be configured together. Using the telephone's programmable keys, users can electronically create and send text messages to anyone in the office with a Connexions voice processing system. The message will automatically appear on the recipient's telephone display screen.

The system automatically logs each call, assigns the proper account number, calculates charges and generates an invoice for users who wish to bill for telephone time.

According to Dictaphone, because the software runs in background to the computer's primary application, the computer can be used simultaneously for other applications, without interfering with the voice processing network.

Sterling provides IMS/DC access

Sterling Software, Inc.'s Dylakor Division has enhanced its virtual disk-based micro-to-mainframe link, allowing it to operate in an IBM IMS/DC environment.

Dyl-Vlink, which currently supports IBM's TSO, CICS (DOS and MVS) and VM/CMS environments, allows microcomputer users to transparently access mainframe-resident virtual disks as if they were micro-based, IBM PC-DOS-controlled peripheral disk drives, a spokesman said.

The Vfile feature, a mainframe information retrieval function of Dylakor's Dyl-280, Dyl-280 II and Dyl-270 information retrieval and management packages, also

works with Dyl-Vlink. When used with the Vfile feature, data from mainframe data bases can be made available to the personal computer user, the vendor said.

Dyl-Vlink also includes Dyl-Script, which automatically logs users onto any environment in which Dyl-Vlink operates.

Dyl-Vlink, designed to operate in an IMS/DC environment, is priced at $26,000 for a 50-microcomputer site license. The Vfile feature is free of charge to Dyl-270, Dyl-280 and Dyl-280 II customers who purchase Dyl-Vlink. Dyl-Script is also free with the purchase of Dyl-Link, a Dylakor spokesman said.

Q-bus-, Unibus-based systems get graphics on Peritek board

Primary display totals 256 colors from palette

Peritek Corp. of Oakland, Calif., has unveiled its VCK-Q/U board for Digital Equipment Corp. Q-bus or Unibus computers.

The board, which ranges in price from $4,000 to $7,000, consists of a stand-alone computer based on Motorola, Inc.'s 68010 chip and a 68881 floating-point accelerator, both of which have access to all on-board devices.

On-board memory available to the 68010 and/or the host CPU includes 1M byte of random-access memory

(RAM), 1M byte of video RAM, two video overlay memories and 64K bytes of erasable programmable read-only memory or RAM, a Peritek spokesman said.

Color graphics features

The board also includes a color graphics controller with features such as windows, zoom, panning and vertical scroll. A primary color display of 1,024 by 1,024 by 8 bit/pixel shows 256 colors from a palette of either 4,096 or 16 million colors, the vendor said. The primary display is said to be supplemented by an alphanumeric overlay and a single-color graphics overlay for superimposing information such as grid lines, ar-

rows and boxes.

An external hard disk or other peripheral can be accessed by an onboard small computer systems interface (SCSI) port, which is linked to a direct memory access (DMA) controller. The DMA controller allows transfer of data between the SCSI port, the CRT controller, the computer bus (if it is a Q-bus), the video RAM, the system RAM and all other memory.

Dual RS-232 serial ports operating at rates of up to 38.4K bit/sec. are included.

According to the vendor, an independent, alphanumeric overlay can display 84 characters by 64 lines in a selectable color. The independent graphics overlay of 1,024 by 1,024 by

1 bit/pixel reportedly superimposes a single selectable color that contrasts with the primary graphics display.

The primary graphics display, the alphanumeric overlay and the graphics overlay can appear simultaneously or separately, a company spokesman said.

The arbitration circuitry is said to allow the display system access to all on-board devices and memory in addition to all off-board memory on the bus.

Also provided are eight conditional drawing functions, which include drawing patterns, color mixing, software windowing and drawing area control with hardware clipping and fitting.

THIS PLACE WOULD BE CHAOS.

724 T-MUX

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NEW PRODUCTS/SOFTWARE & SERVICES

Applications packages

Cadre Technologies, Inc. has announced **Teamwork/SD**, an environment for structured design.

Teamwork/SD is said to graphically support modules, invocations, couples and connectors that are critical to the development of a structure chart. Teamwork/SD reportedly supports most widely used structured design methodologies.

It features syntax and completeness-checking for either a single sheet or entire structure chart. It also includes an editor for module specifications and an editor for a data dictionary.

Teamwork/SD is available for use on Apollo Computer, Inc.'s Domain, IBM's RT Personal Computer and Sun Microsystems, Inc.'s workstations.

Teamwork/SD costs $8,900.

Cadre Technologies, 222 Richmond St., Providence, R.I. 02903.

∎

Scope Publications, Inc. has announced **Financial Planner Plus**, a financial library for the IBM System/36.

Financial Planner Plus features 20 programs said to offer solutions to commonly asked financial questions. Included in Financial Planner Plus are the future value of an investment, present value of a future sum, future value of regular deposits, annual yield to maturity on a bond, mortgage payment and financial ratios. The library is fully interactive and features the ability to enter edited values with commas and decimal points.

Financial Planner Plus is priced at $125. An upgrade is available to users of Scope Financial Planner for a $35 charge.

Scope Publications, P.O. Box 437, Lake Mary, Fla. 32746.

∎

Gold Hill Computers, Inc. has announced the **Golden Common LISP (GCLISP) 386 Developer**, an updated version of its artificial intelligence development system.

GCLISP 386 includes a large memory interpreter and compiler, editor, tutorial and on-line Help systems and supports lexical scoping, packages and transcendental functions. It is said to address up to 15M bytes of memory. According to the vendor, the GCLISP 386 Developer bundled with the firm's 386 Hummingboard performs up to five times faster than the previous Personal Computer AT-based GCLISP 286 Developer.

The Microsoft Corp. MS-DOS version of the GCLISP 386 Developer is priced at $1,195.

Gold Hill Computers, 163 Harvard St., Cambridge, Mass. 02139.

Languages

Lucid, Inc. has ported its **Common LISP** programming environment to Digital Equipment Corp.'s VAX family of computers.

Common LISP includes extensions for using a mouse, for addressing bit-map displays via the windowing facility, for handling errors with debugging tools and for calling programs written in other languages.

There are two versions of Common LISP. The development environment, including utilities and tools necessary for the development of LISP applications, costs from $4,000. The application environment, which allows for the execution of applications written using the development environment, costs from $9,000.

Lucid, 707 Laurel St., Menlo Park, Calif. 94025.

Utilities

Innovative Software Solutions, Inc. has released **Dictionary Companions** for Hewlett-Packard Co.'s 3000 family of computers.

Dictionary Companions consists of two programs, DICTCPD and DICTCCD, which are said to interface with HP's Dictionary/3000.

Each program can compare source code with data dictionary definitions to verify the source code. The programs can also load source code into the data dictionary.

The Dictionary Companions package costs $1,695.

Innovative Software Solutions, 10705 Colton St., Fairfax, Va. 22032.

∎

Enigma Logic, Inc. has introduced **Safeword System**, a password security system for Stratus Computer, Inc. computers.

A combined hardware and software security system, Safeword is said to be capable of verifying the identity of any interactive user of the Stratus VOS operating system.

The system can reportedly secure both dial-up lines and local terminals. According to the vendor, it provides users with a password-issuing device as well as Safeword-generated passwords.

The Safeword System costs $100 per user for large computers.

Enigma Logic, Suite 301, 2151 Salvio, Concord, Calif. 94520.
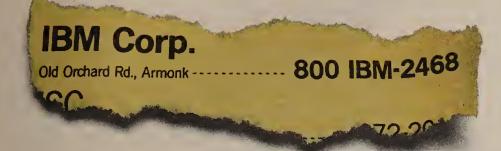
Henco Software, Inc. has announced **Info Revision 9.41** for Data General Corp.'s Eclipse/MV system users.

Revision 9.41 includes an interface to Data General's Comprehensive Electronic Office (CEO) system, enhanced Infos II interface and a message option in English or French.

Additional functions available with the Info interface include invoking the CEO calculator, monitoring the CEO message status from Info and storing an Info spool file for an

NEW PRODUCTS/MICROCOMPUTERS

ASCII operating system file in a CEO file cabinet.

With the Infos II interface, users can reportedly read a locked Infos II record and select an Infos II file faster.

Info Revision 9.41 costs from $8,600 to $40,000, depending on machine size.

Henco Software, 100 Fifth Ave., Waltham, Mass. 02154.

MICROS

Systems

Hitech International, Inc. has announced **Sam 3001 AT,** its IBM Personal Computer AT-compatible computer.

Sam 3001 AT, based on the Intel Corp. 80286 microprocessor, includes 1M byte of random-access memory on board, a 1.2M-byte floppy disk drive, two serial ports, one parallel port and either a monochromatic or a red-green-blue board.

Sam 3001 AT costs $1,295.

Hitech International, 1180-M Miraloma Way, Sunnyvale, Calif. 94086.

■

Phar Lap Software, Inc. has released its **386/ASM** software package.

The software package is said to be an assembler and linker for the Intel Corp.

80386 microprocessor. The 386/ASM supports the same instruction mnemonics, assembler directives, expression formats and macro languages as Microsoft Corp.'s 8086 macro assembler.

It runs on the IBM Personal Computer, the Digital Equipment Corp. VAX and the AT&T Unix System V host computer systems. The 386/ASM for the VAX VMS version costs $4,995, and the PC version costs $495.

Phar Lap Software, 60 Aberdeen Ave., Cambridge, Mass. 02138.

Software applications packages

Ernst & Whinney has introduced **EDP Concepts for Business,** a program said to help improve understanding of basic, electronic data processing (EDP) audit- and control-related issues.

EDP Concepts for Business is a 16-hour course with six modules describing how the EDP environment works. The modules include computers and their components, data and data processing, programming and languages, the system development life cycle, EDP personnel and access control and security.

The program runs on IBM Personal Computers, Personal Computer XTs and ATs or compatibles with at least 192K bytes of memory.

The EDP Concepts for Business costs $595.

Ernst & Whinney, 2000 National City Center, Cleveland, Ohio 44114.

■

Corporate Education Resources, Inc. has released its **Corporate Charter** software program.

Using a company's employee data base, Corporate Charter is said to be able to produce wall maps that depict all or part of an organization and charts, complete with indexes and appendices, that can be bound together in book form. Corporate Charter allows as many as 1,000 boxes or data fields to be placed in any position on a chart. The software can create, display, modify and print ad hoc charts.

Corporate Charter costs $4,800.

Corporate Education Resources, 102 E. Briggs St., Fairfield, Iowa 52556.

■

Cyber/Source has announced the availability of the **Uni-CAD** computer-aided design package for IBM Personal Computers and compatibles.

Uni-CAD is said to be available in several configurations. According to the vendor, it will run on IBM's Color Graphics Adapter and Enhanced Graphics Adapter systems using either one

monitor or, for a larger drawing area, two screens with one handling all the menus and the other handling all the drawings.

The Uni-CAD software package costs $1,695.

Cyber/Source, 2400 Telegraph Road, Southfield, Mich. 48034.

Software languages

Digitalk, Inc. has introduced **Smalltalk/V,** a version of its object-oriented programming language.

Smalltalk/V reportedly transforms an IBM Personal Computer or compatible into a graphical programming environment similar to that found on artificial intelligence workstations.

Smalltalk/V features bit-mapped graphics, windows, mouse support, a built-in Prolog compiler, object-swapping virtual memory and a source-level debugger.

The Smalltalk/V environment allows users to call up any Smalltalk/V capability via pop-up menus.

Smalltalk/V costs $99.

Digitalk, 5200 W. Century Blvd., Los Angeles, Calif. 90045.

Software utilities

Front Row Systems has introduced **Menu Maker** for Version 2 of Lotus Development Corp.'s 1-2-3.

Menu Maker reportedly allows the user to learn how tailor-made menus and work sheets expand the capabilities of 1-2-3 and make it easier to use.

With Menu Maker, the user reportedly specifies a few parameters, and within seconds, a menu is coded and in place, ready to replace the standard 1-2-3 menu.

According to the vendor, there are six additional work sheets provided with Menu Maker, including data base, utility, finance and date and time.

Menu Maker costs $35.

Front Row Systems, Suite 44, P.O. Box 550346, 3158 Maple Drive, Atlanta, Ga. 30355.

■

Ungermann-Bass, Inc. has introduced the **Connection Manager** memory-resident utility.

Connection Manager is said to enable a user of the company's Net/One Personal Connection local-area network to rapidly access Microsoft Corp.'s MS-Net-based servers and other Net/One resources without leaving the application program running on an IBM Personal Computer.

Connection Manager is priced at $100 a year, which includes documentation and support as well as updates.

Ungermann-Bass, 2560 Mission College Blvd., Santa Clara, Calif. 95052.

NEW PRODUCTS/MICROCOMPUTERS

Canal Systems, Inc. has introduced **First Avenue**, an integrated productivity program for IBM Personal Computers, Personal Computer XTs, ATs and compatibles.

First Avenue features electronic mail and file transfers with asynchronous communications. The software includes a menu system for access to applications and DOS functions. Windows allow the user to use the integrated productivity tools while working on active application programs such as Lotus Development Corp.'s Lotus 1-2-3 or Ashton-Tate's Dbase III.

Integrated detail organizers keep track of errand lists, appointments, addresses and messages.

First Avenue costs $99.

Canal Systems, 5230 Clark Ave., Lakewood, Calif. 90712.

■

JRM Software Ltd. has introduced **EZ-Laser**, a desktop tool for Hewlett-Packard Co. Laserjet printers.

EZ-Laser, when used in the background of a word processor, is said to form a desktop publishing system that can format text, design forms and headlines. It can download mutliple HP "soft" fonts and cartridge fonts and incorporate high-resolution graphics into any document for professional output. EZ-Laser runs under IBM PC-DOS or Microsoft Corp. MS-DOS.

EZ-Laser operates on IBM Personal Computers, Personal Computer XTs, ATs or compatibles with a minimum of 128K bytes of memory.

The EZ-Laser tool is priced at $99.95.

JRM Software, P.O. Box 2847, Reston, Va. 22090.

Software enhancements

Welcom Software Technology has announced **Open Plan Version 2.0** of its management software system, which runs on the IBM Personal Computer, Personal Computer XT and AT.

Version 2.0 includes support for local-area networks, expanded graphics capabilities, enhanced time-phase network drawings, improved resource scheduling and a more powerful report writer.

Other enhancements include menu-driven merge of projects, automatic adjustment of input screens and user-specified accounting periods. Version 2.0 reportedly allows greater communications with mini and mainframe systems.

Open Plan Version 2.0 costs $4,200.

Welcom Software Technology, Suite 375, 1325 S. Dairy Ashford Road, Houston, Texas 77077.

Communications

Simware, Inc. has announced **SIM/3287**, a module for the SIM3278/VTAM product line that provides PC-attached printer support on a dial-up and X.25 basis.

SIM/3287 is a software emulator that appears as an IBM Systems Network Architecture printer, but routes data to the printer at a SIMPC user's workstation. Because SIM/3287 is able to identify two separate logical addresses even though there is only one physical link, SIMPC users can switch between running full-screen mainframe applications on

their terminal and receiving print data on their PC-attached printers.

SIM/3287 is priced at $7,500.

Simware, 14 Concourse Gate, Nepean, Ont., Canada K2E 7S6.

Printers/ Plotters/Peripherals

ITT Qume Corp. has introduced the **Profeeder 2WT**, a wide-carriage sheet feeder.

The unit is user-installable and snaps into the Qume Sprint 11 Plus Widetrack series of daisywheel printers. It has a dual-bin feature that allows users to store wide paper in one bin and standard-format sheets in the other. The unit also has adjustable paper trays.

The Profeeder 2WT costs $1,795.

ITT Qume, 2350 Qume Drive, San Jose, Calif. 95131.

Multiplexers/Modems

Avanti Communications Corp. has announced **Fallback capability** for its **Dpac-56 DDS** multiplexer.

The Fallback capability is said to route data automatically over alternative network facilities if a primary AT&T Digital Data Service (DDS) circuit fails.

Individual channels can be reprogrammed to change data rates, clocking modes and other parameters as necessary to transfer multiplexed data to an alternate aggregate, the vendor said.

Fallback on the Dpac-56 DDS multiplexer is available in two configurations: an RS-449 aggregate with an RS-449 Fallback and a V.35 aggregate with a V.35 Fallback.

The RS-449 and the V.35 configu-

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NEW PRODUCTS/COMMUNICATIONS

rations cost $450 each or $800 each when part of a hardware-redundant Dpac-56.

Avanti Communications, Aquidneck Industrial Park, Newport, R.I. 02840.

■

NKT, Inc. has announced the availability of its **Optimux 32** optical multiplexer for networking applications.

The Optimux 32 is said to provide 32 transparent data channels using an optical data transmission system. Each channel can run at speeds up to 64K bit/sec. With the Optimux 32, data ports can be located up to two miles from each other, the vendor said.

Full support of the RS-232 specification is available through the use of an internal patch panel, which allows the user to optimize each port to meet local needs.

The multiplexer can be used for point-to-point, loop or ring configurations and is available in synchronous or asynchronous versions.

The Optimux 32 costs $1,985.

NKT, 300 Knickerbocker Road, Cresskill, N.J. 07626.

Local-area networks

Honeywell, Inc. has announced its **MIU7800** multiple interface unit.

The MIU7800 reportedly connects up to 32 terminals to one communications line. It allows connected terminals to be located up to 1,000 cable ft away from the unit at rates of up to 9.6K bit/sec. or 300 cable ft away at 19.2K bit/sec. with the RS-232C and CCITT V24/V28 interfaces, according to the vendor. The unit is said to receive its timing signal from a modem or host computer.

The MIU7800 is priced at $900 and is available for lease at $46 per month, the vendor stated.

Honeywell, 300 Concord Road, Billerica, Mass. 01821.

SYSTEMS & PERIPHERALS

Processors

National Instruments has released its **GPIB-XP** IEEE-488 interface for use with the Texas Instruments, Inc. Explorer.

The GPIB-XP reportedly allows Explorer users to send and receive data from IEEE-488 general-purpose interface bus devices. According to the vendor, it allows Explorer users to link their systems to automated test equipment, depot maintenance stations and instrumentation for equipment monitoring and other general-purpose test and measurement applications.

The GPIB-XP unit costs $1,695 and includes interface software.

National Instruments, 12109 Technology Blvd., Austin, Texas 78727.

Data storage

Alcatel Thomson Gigadisc, Inc. has announced a **technique** said to allow a Gigadisc optical disk drive to utilize media designed for different recording technologies.

Alcatel Thomson Gigadisc drive units, which use a sampled format on the disk, can now accept media from 3M Co. and Hoescht AG in addition to

their own. The Gigadisc is a 12-in., nonerasable optical disk system with a storage capacity of 1G byte per side. Major features of the Gigadisc are removability of the disks, direct access to any sector in the read or write mode and compatibility with existing data management software.

The Gigadisc controller costs $15,000; a single-side disk costs $400; and the two-side disk costs $600.

Alcatel Thomson Gigadisc, 470 Totten Pond Road, Waltham, Mass. 02154.

Terminals

Applied Digital Data Systems, Inc. has introduced the **ADDS 2020** flicker-free ASCII terminal.

The ADDS 2020 features a 14-in., flat-face display with an etched screen available in green, amber and white.

According to the vendor, other features include programmable menu-bar assistance, which expands function-key labels and holds messages in nonvolatile memory.

The ADDS 2020 display is said to have four speeds of smooth scroll, tag and field highlights and double-wide as well as double-high and wide characters.

The ADDS 2020 is priced at $695.

Applied Digital Data Systems, 100 Marcus Blvd., Hauppauge, N.Y. 11788.

Printers/Plotters

Spur Products Corp. has introduced the **USA/Harris Universal Subsystem adapter**.

According to the vendor, the adapter can make Harris Corp. computers compatible with the IBM 3211 printer and compatible high-speed printers.

The USA/Harris adapter reportedly allows the system to print up to 3,000 line/min of shaped characters with a Storage Technology Corp. printer.

With a Xerox Corp. 9700 laser printer, the adapter is said to allow up to 18,000 line/min of dot matrix printing.

According to a Spur Products spokesman, the computer must be equipped with a standard Harris Printer Drive board in order to operate the USA/Harris Universal Subsystem.
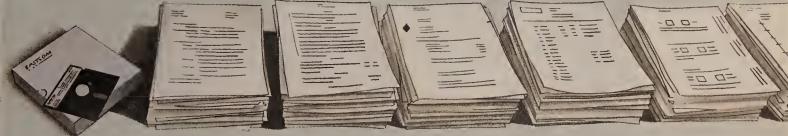
The USA/Harris Universal Subsystem adapter is priced at $8,500.

Spur Products, 13469 Beach Ave., Marina Del Rey, Calif. 90292.

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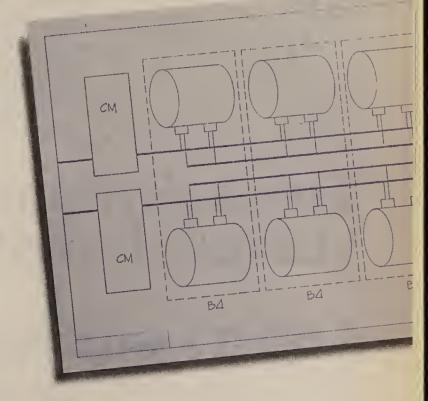
For new and present customers alike, however, the foundations of 8380E capacity gains come from technologies StorageTek has spent years pioneering and perfecting. These include dual porting (multiple data paths which allow users to lower response times and boost system utilization) and thin-film head design, dual actuators per spindle, distributed electronics, circuit redundancy and continuous self-diagnostics—all of which increase the reliability so critical on disk drives. For StorageTek, these advancements are not new technologies; they are proven performance features that have been part of StorageTek's disk development for many years.

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COMPUTER INDUSTRY

Terrorist threat spurs growth in access control system mart

Aspiring firms stake claim in thriving field

By Alan Alper

When corporations and government offices secured their facilities in the recent past, they installed alarms, barbed wire, closed-circuit television cameras and tamper-proof locks. Such measures, however, have proven woefully inadequate in the face of escalating incidents of theft, terrorism and espionage.

The heightened consciousness of "it could happen here" is helping to create a thriving market for computer-based systems that control access to facilities.

"It's an industry whose growth is being propelled by 'what-if' scenarios," says Joseph Freeman of J. P. Freeman & Co., a Newtown, Conn., research firm that estimates the 1986 market for access control systems at $394 million. Freeman projects the market will grow to about $1.64 billion by 1990.

Corporate and government fear has become a business opportunity for a group of firms ranging from tiny unknowns to AT&T. Access control vendor ranks have swelled over the last few years to between 60 and 130 companies, depending on whether component makers are included

along with turnkey systems suppliers.

Within the access control business, diversified behemoths like AT&T and Honeywell, Inc. are competing against perennial market leaders Cardkey Systems, Inc., Schlage Electronics, Inc. and Rusco Electronics Systems, Inc. It is also a business in which young entrepreneurial concerns, such as Computer Application Systems, Inc. of Boca Raton, Fla., are attempting to parlay their computer smarts into a competitive advantage over old-line alarm and security product vendors.

"Everyone under the sun is trying to get into the market," says George Rye, product and sales manager of security systems at Honeywell. "While the majors have the lion's share of the market, there seems to be enough room for all the other folks."

The attraction of computer-based systems is that they can create audit trails to help managers monitor activity within departments or buildings and enhance facility utilization. The information gleaned from these systems can be used to measure em-

ployee attendance for payroll purposes, help determine when to lock certain entrances to a building and when to extinguish lights.

"People are realizing that they need more control," says Joe Borcherding, a branch sales manager with Rusco Electronics Systems, a subsidiary of Figgie International, Inc. "While a card access system as a stand-alone device may not be the be-all and end-all, it is a good management tool."

Computer Application Systems founder and Chairman Jim Baker, a 14-year IBM veteran who helped devise Big Blue's internal security systems, says more and more companies are interested in some type of access control device as prices decline.

"Almost all companies today are looking at various types of systems," Baker says. "It's part of the smart building concept."

Computer Application Systems, an IBM value-added reseller, was recently awarded an open-ended contract to provide access control systems to Big Blue's worldwide facilities.

While the marketplace changes,

> ''
>
> *'Everyone under the sun is trying to get into the market.'*
>
> — George Rye
> Honeywell, Inc.

new technology is altering the way access control is performed. The identification cards, which for years used magnetic stripes, are being supplanted by proximity cards, devices that use microwave signals to confirm or deny access.

Looming in the future are systems that read finger, palm or voice prints and scan retinas. Using a method known as biometrics, these devices match an individual's human characteristics to those already on file in a host computer.

Banking on such an analysis, AT&T last year entered the access control industry with a system that uses computer and videotext technology. Called Security Access Manager, the system uses a video camera to capture an image, which is then digitized and stored in an AT&T 3B series minicomputer.

To verify whether access should be allowed, a guard inserts an employee's card key into a reader that calls up the image on an AT&T PC 6300 microcomputer.

In the future, analysts warn that the steady stream of new market entrants will cause a severe shakeout in the access control business.

"What you'll see is consolidation through merger and acquisition, similiar to what has transpired in the computer industry proper," market researcher Freeman says.

COMPUTER INDUSTRY

BUNCH deck gets reshuffled

Less than a year later, Blumenthal was back with another friendly offer of $70 a share. This time, Blumenthal said he had evaluated all the options and was sure the deal could be done. He even obtained prior antitrust approval from the U.S. Department of Justice to make sure.

Interestingly, the proposal was made when Sperry's Probst was in Japan on business. The element of surprise left Sperry's brain trust with little maneuvering room. They were caught off guard.

Risk arbitrageurs, who owned a majority of Sperry's outstanding shares, Blumenthal thought, would surely jump at the nice premium he had offered them. But that would only give Burroughs controlling interest of Sperry. Blumenthal needed — and wanted — the whole company.

The amiable acquisition attempt soon segued into a hostile takeover. Sperry rejected Burroughs' offer as inadequate. At the same time, Sperry made a self-tender of $80 a share for the same outstanding stock that Burroughs needed to assume ownership. The offer would only commence if Burroughs attempted to buy its way into control.

Poison pill

It was clear, however, that Sperry's defense was a poison pill it never intended to swallow.

The strategy did buy Sperry time to search for what it considered a more fitting suitor. It courted Honeywell, Inc. and sent out feelers to other deep-pocketed corporations. Sperry, however, was rebuffed.

Having things right where he wanted them, Blumenthal next sweetened his offer to $75 a share to get Sperry back to the bargaining table. Negotiations resumed, but soon broke down when Burroughs refused to budge beyond $75 a share. Sperry said an offer "north" of that figure would be necessary to pique its interest.

Minutes before Sperry's board was scheduled to meet on May 27, Burroughs upped the ante to $76.50. Its asking price met, and with no place to turn, Sperry succumbed. While the firm lost its fight to remain independent, Probst found solace in receiving a price closer to the $80-a-share value Sperry had set on itself than Burroughs' $70-a-share proposal.

As of tomorrow, Blumenthal will have succeeded in creating the world's second largest computer vendor. If merging the two companies results in a critical mass that contributes to hundreds of millions of dollars in cost reductions, all Blumenthal's efforts may begin to pay off. Better yet, if the combined $10 billion firm offers offers technological solutions to rival Big Blue and can convince users of its vitality, then Blumenthal's vision will have been proven correct.

Blumenthal first has to make good on his promise to reduce by $1.5 billion the $2.9 billion debt it is incurring to buy Sperry. This reduction, he says, will be accomplished through a program of divestiture, consolidation and closures. Blumenthal has already put Sperry's

Aerospace & Marine Group on the block to focus resources on the combined firm's commercial computer and defense systems businesses.

Yet Blumenthal will have created a company beset with a myriad of problems. The brain trust will have to find a way to bridge incompatible mainframe computer architectures and transform a disparate but huge installed base into a unified user community.

Things could backfire as hordes of Sperry and Burroughs customers defect. One plus one may add up to one and a half.

The combination could also give new meaning to Burroughs' own advertising campaign of a couple of years past, which chided IBM that "Bigger is not necessarily better."

Only time will tell.

Vector Graphic ceases operations, sells inventory, last business unit

WESTLAKE VILLAGE, Calif. — Financially troubled Vector Graphic, Inc. officially ceased business operations last week when it announced a final asset sale of less than $1 million.

The vendor of single-user and multiuser microcomputers, which suspended manufacturing in March, said the asset sales will not be sufficient to repay the full amount that Vector Graphic owes its secured creditors.

The firm filed for Chapter 11 bankruptcy protection from creditors Dec. 23, 1985. Last week, Vector Graphic sold off the last remaining piece of its operations, its installed base service and repair business, to Service Intelligence Corp. of Westlake Village. It also sold remaining inventory and equipment to an undisclosed third party.

Vector Graphic's secured creditors will receive a total of $925,000 from the divestitures and other prior asset sales.

Vector Graphic will be unable to reorganize or to pay any amount to its unsecured creditors or shareholders, a corporate statement said.

During 1985, Vector Graphic failed to reach agreement on two different proposals that could have prolonged its product line.

BANK OF AMERICA CHEVRON MOTOROLA, INC. WESTINGHOUSE DEFENSE & EL
GOLDKIST INC. FOXBORO CO. APPLE COMPUTERS FORD AEROSPACE DHL WO
CONTROL DATA CORP. HERMAN MILLER, INC. THE STOUFFER CORP. COMPUTER
AEROPORTS DE PARIS NEODATA SERVICES LSI LOGIC QUESTAR SERVICES CORP
CENTRAL N.E. COLLEGE GPA (GROUPE DES POPULAIRES D'ASSURANCES) TECHNI
CROCKER BANK SOFRESID FEDERAL HOME LOAN BANKS MONOLITHIC MEMOR
STANFORD LINEAR ACCELERATOR CENTER CENTRE D'AUTOMATISATION POUR
ASPEN SYSTEMS, INC. FINANCIAL TECHNOLOGIES, INC. PLANNING RESEARCH (
HOU   N CHRONI   OUTHE   UNIVER   MPAGNIE   A
REA   BATES   NIVE   RI M   ILE BANK
MIC   TATE U   RSIT   RTHWES   NA   IFE RICH   )
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APP   OMI   S   )   SPACE DHL W   N   E)   S   ST
THE   UFFE   V.   RVISION HAM   N   CO   R   N I
LSI   C QUE.   TC   RPORATION   S   HE   ANY
TEC   AL ECO   SE   BELIN H   GR   CS   RD L
RAY   CORPO   FIR.   VICE   ANFC   EAR   E
VER   CRAWFOD   COMPA   A POWE   OMPA   PRINGS
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CRAWFORD & COMPANY READING & BATES THE UNIVERSITY OF MISSOURI ME
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A FEW GOOD NAMES THAT

There's a present for you in Computerworld's 1000th issue.

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COMPUTER INDUSTRY

MCC to conduct business as usual despite loss of Inman

Research group seeks replacement for chief

By James A. Martin

AUSTIN, Texas — Although the Microelectronics and Computer Technology Corp. (MCC) is moving into a long-anticipated phase of product development and technology transfer at the same time as Bobby R. Inman's resignation, his departure is not expected to have a significant impact on MCC's future.

Inman, a retired U.S. Navy admiral who headed the computer research consortium, has resigned his posts as president, chairman and chief executive officer [CW, Sept. 8].

"MCC is a productive organization that has a highly confident staff in place, and there's no reason to believe the momentum will not carry forth, with or without Admiral Inman," says Richard Hill, a Honeywell, Inc. liaison to MCC's Advanced Computer Architecture program.

"The organization's goals are clear, and the pattern for the organization is set," Hill adds.

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> *'MCC is at the stage now where the technology is beginning to flow to shareholders.'*
>
> **— Walt Frederickson**
> **Harris Corp. Information Systems Sector**

Inman, 55, has announced that he will not renew his contract with MCC when it expires Dec. 31. The former director of the National Security Agency and deputy director of the Central Intelligence Agency told MCC's board of directors that, after three years of research and development, the organization was ready to "stand on its own and focus on . . . the transfer of technology to its shareholders."

MCC has organized a search committee comprising some eight board members to find a replacement for Inman, according to William Stotesbery, an MCC spokesman. Although MCC is not commenting, it is likely the search will comb large universities such as MIT and the University of Michigan and major corporations with strong research and development interests.

"MCC will most likely try to replace Inman with an experienced research manager, someone who manages a large research program," says Walt Frederickson, vice-president of technology for Harris Corp.'s Information Systems Sector and a member of the MCC technical advisory board.

"MCC is at the stage now where the technology is beginning to flow to shareholders," Frederickson says. "The organization is entering a new phase of development, and the new president will continue that thrust."

"Technology transfer" is the catchphrase that has motivated MCC and its 21 shareholder companies since the organization was developed in late 1982 to form a cohesive American counterattack against Japanese technology gains. The organization's goal since its inception has been to involve otherwise competitive companies like Digital Equipment Corp., Harris and NCR Corp. to develop technologies together for both products and R&D.

But MCC has sometimes been criticized for its slowness in transferring technology to its shareholders, and some have suggested that Inman's departure was partly a result of disputes and tension between shareholders.

MCC's Inman

Such accounts have been greatly exaggerated, according to Stotesbery. "There are disagreements on the board, as there are on any board," he says. "Many people have looked for deeper meaning in Inman's departure, but his statements reflect the truth, which is that he's ready to move on to something else and feels the organization is ready to stand on its own."

"We don't always agree on everything," Frederickson adds, "but I've been amazed at the cohesiveness the board members do have. There have been some internal squabbles, but they are all reasonable human beings."

Inman's presence at MCC was crucial to its formation, but the organization is preparing to move ahead, according to John Lacey, executive vice-president of technology and planning for Control Data Corp. and chairman of MCC's governors committee.

Inman has stated that he structured the company to not be dependent upon any one person.

"The essential job of building MCC has been completed," Lacey says. "Now it's time for both Inman and MCC to move on to other things."

Inman was traveling last week and could not be reached for comment.

COMPUTER INDUSTRY

U.S. standards efforts receive cool European reception

COS driving to enlist international members

By Amiel Kornel

PARIS — As latecomers to the open standards struggle, U.S. firms may receive a cool European reception in their drive to enlist international allies.

The Corporation for Open Systems (COS), which recently hosted a meeting in Brussels to sign up European computer vendors and users, decided in June to internationalize its membership.

It hopes to recruit European and Japanese firms to establish a single worldwide set of communications protocols.

European doubts

But European officials are already expressing doubts about whether a unified approach is feasible — or desirable.

Founded in January, COS promotes the definition and introduction of industrywide computer communications standards.

The Vienna, Va.-based nonprofit organization is currently funded by its 56 North American members, including most major U.S. computer and telecommunications vendors. COS has projected annual expenditures of approximately $9 million.

COS recently announced that the Standards Promotion and Application Group (SPAG), which includes all major European computer manufacturers, has agreed to cooperate with COS, suggesting that the U.S. organization had won some measure of success in its international recruitment campaign.

But a liaison with SPAG could slow rather than accelerate COS's plan to internationalize. The inter-association link may permit European firms to decline COS's invitation to sign up while keeping trans-Atlantic channels open.

"I don't expect SPAG members to be in COS," said Emmanuel De Robien, previous chairman of SPAG and a director at French computer maker Bull SA.

"We think that if Bull cooperates through SPAG, we don't need to join," De Robien said.

'Direct participation'

This does not sit well with the COS. "In light of our objectives, we require direct participation of foreign vendors and users," COS Chairman Thomas Chun said. COS, in fact, is currently taking its recruitment campaign to Japan.

SPAG members also noted that they have been promoting the adoption of open standards since 1983, long before the U.S. woke up to the need. They fear their efforts will be appropriated by the more powerful U.S. firms.

The initial reaction from European users to the COS campaign has been tepid. "We think that COS is an American affair," said Denis Deleard, technical secretary at Cigref,

> **"**
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> *'We think that COS is an American affair. We are disturbed by COS's ambition to be the world's center of certification testing procedures.'*
>
> — Denis Deleard
> Cigref

an association of large French computer users.

"We are disturbed by COS's ambition to be the world's center of certification testing procedures," he added.

Different environments

De Robien echoed the view that it would not be feasible to set up a unique worldwide testing procedure.

"Even if we do our best, we will not prevent the telecommunications environment in Europe from being different than in the U.S. We cannot be in absolute agreement in the upper levels of the seven-layer Open Systems Interconnect model, although we will have more facility in the lower ones."

International standards organizations have so far remained aloof from the vendors' standards activities. Nonetheless, they acknowledge that a private international consortium involved in standards setting could menace the efficacy of their own work.

"I would welcome it if the club of open systems interconnection is widening," said Theodor Irmer, director of the Geneva-based Consultative Committee for International Telegraphy and Telephony.

"But there is a potential danger. They should not come to firm decisions before submitting them to the official standards-setting bodies," Irmer added.

Kornel is Paris bureau chief for CW Communications International News Service.

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COMPUTER INDUSTRY

Chip prices anger vendors

in their products."

A similar view was expressed by Wayne Collins, vice-president of materials and resources at Compaq Computer Corp.

"It's probably a little premature to say that the government's actions have al-

ready seriously hurt systems manufacturers," Collins said. "But if appropriate steps aren't put in place, injury could well be the final outcome."

Toledo's and Collins' concerns stem from the recent agreement in which the U.S. extracted a pledge from Japan to cease dumping its semiconductor parts in the U.S. market [CW, Aug. 4].

In essence, the pact forced Japanese vendors to raise substantially the prices of

the memory devices they sell in the U.S. and encouraged their U.S. counterparts to follow suit.

Since the agreement was signed on July 31, for example, the prices for certain classes of erasable programmable read-only memories and dynamic RAMs have jumped between 100% and 600%, Thompson said.

But because the accord applies only to sales in the U.S., prices for the identical components in other countries

have remained the same. The result has been a wide disparity in semiconductor pricing between the U.S. and foreign markets.
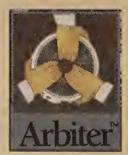
Although the price hikes mean financial relief for long-suffering U.S. chip vendors, they threaten to trigger a wholesale exodus of systems makers and cost the domestic electronics industry untold numbers of manufacturing jobs.

"If companies can buy their parts overseas for half

the price they'd pay in this country, they might as well make their products over there and then ship them back here," Toledo said.

Vendors say they believe the negative effect of the agreement could be minimized if the U.S. government could somehow ensure worldwide consistency in semiconductor prices. But such a prospect "is a joke and would be unenforceable," according to a vendor source who asked not to be named.

Big Eight firm signs buy-out

NEW YORK — Signaling a further move into computer-related services, Big Eight accounting firm Coopers & Lybrand has acquired Walter Ulrich Consulting, one of the leading consulting firms in data communications systems implementation.

Terms of the acquisition were not disclosed. The 7-year-old Houston-based consulting firm will operate as a subsidiary of Coopers & Lybrand, with Walter Ulrich serving as subsidiary manager and as a Coopers & Lybrand partner.

"Coopers & Lybrand has made a major expansion into information services over the past three years through acquisition, investment in methodology tools and techniques," said Tom Rush, national director of telecom and technical services for the accounting firm.

"This acquisition is a natural expansion into office automation and networking," Rush explained.

COMPUTER INDUSTRY

EXECUTIVE CORNER

John A. Armstrong has been appointed director of research at IBM's Research Division. In his new position, he will be responsible for the Thomas J. Watson Research Center in Yorktown Heights, N.Y., the Almaden Research Center in San Jose, Calif., and the Zurich Research Laboratory in Switzerland. Since 1983, Armstrong has been the Research Division's vice-president of logic and memory.

■

Comdisco, Inc. announced action by the board of directors promoting **Robert A. Bardagy** to the newly created position of executive vice-president of marketing, electing **John J. Vosicky** a director of the company and naming **Alan J. Andreini**, **Tyler B. Glenn** and **Paul W. Fish** to three newly created positions of senior vice-president.

■

William T. Ylvisaker, chairman of the board and chairman of the executive committee of Gould, Inc., has retired as director and officer of the company.

■

John Baerthlein has been appointed president of Sterling Software, Inc.'s Systems Software Marketing Division in Rancho Cordova, Calif. Baerthlein was formerly vice-president of international sales at Policy Management Systems Corp. in Columbia, S.C.

■

Microsoft Corp. announced the appointment of **Scott Oki** as senior vice-president of U.S. sales and marketing, reporting to company President **Jon Shirley**. Oki, who previously served as vice-president of international operations, will take over his new position immediately.

■

Dataproducts Corp. announced the retirement of its cofounder and president, **Graham Tyson**. Tyson joined Dataproducts at its founding in 1962 and has served as vice-president, president, chief executive officer and chairman of the board.

Tyson was succeeded as chief executive officer and chairman of the board by **Jack C. Davis**. Davis will now also assume the title of president. Tyson will remain as a member of the board of directors.

■

Counterpoint Computers, Inc., a maker of multiuser computer systems, has announced the appointment of **Douglas Thistlethwaite** as vice-president of operations. Thistlethwaite comes to Counterpoint from Parallel Computers, Inc. in Santa Cruz, Calif., where he was vice-president of operations for three years.

■

Tylan Corp. has announced a management reorganization, including the appointment of **Kenneth Cleveland** as president and chief executive officer to succeed **Charles F. Drexel**, who will continue as chairman of the board. Cleveland, 53, is president and founder of Kenneth Cleveland Associates, Inc., a corporate turnaround specialist.

■

Personal CAD Systems, Inc., manufacturer of microcomputer-based electronic design automation software, has named **Douglas Stone** as president and chief executive officer. Founder **Richard Nedbal**, who previously held the positions of president and chief executive officer, will continue as chairman of the board.

5¢ 10¢ NICKELS AND DIMES

Intelogic Trace, Inc. reported revenue for the year ended July 26 of $155.8 million, compared with $157.5 million in the previous year. Profits for the year were $20 million, or $1.12 per share, compared with $19.7 million, or 97 cents per share a year ago.

■

Teknowledge, Inc. announced revenue for the year ended June 30 of $14.6 million, up from $7.3 million a year ago. Profits were $669,000, or 13 cents per share, compared with a loss of $3.1 million, or $1.16 per share, for the like period a year ago.

Fourth-quarter revenue was $4.3 million, compared with $2.9 million a year ago. The company reported a net loss for the quarter of $310,000, or 5 cents per share, compared with a net income of $333,000, or 11 cents per share, in the like period a year ago.

■

Autodesk, Inc. announced revenue for the second quarter ended July 31 of $12.2 million, an 80% increase over $6.8 million reported in the like period a year ago. Profits were $2.7 million, or 39 cents per share, compared with $1.4 million, or 24 cents per share, in the previous year.

■

Pansophic Systems, Inc. reported revenue for the first quarter ended July 31 of $20.1 million, compared with $16.3 million for the same period a year ago. Profits were $2.4 million, or 28 cents per share, compared with $2 million, or 24 cents per share, in the previous year.

■

Perkin-Elmer Corp. announced net income for the year ended July 31 of $72.6 million, or $1.61 per share, compared with $82.1 million, or $1.84 per share, in the previous year. Revenue for the year was level with the prior year at $1.3 billion.

Fourth-quarter income was $20.5 million, or 46 cents per share, compared with $24.3 million, or 54 cents per share, a year ago. Revenue was $349.9 million, compared with $350.2 million in the comparable period a year ago.

■

Information Science, Inc. reported a net loss for the year ended April 30 of $6.4 million, or $1.35 per share, on revenue of $20.1 million. This compares with a net loss of $11.8 million, or $2.36 per share, on revenue of $28.8 million in the previous year.

■

Esprit Systems, Inc. announced net income for the fourth quarter ended May 31 of $40,000, or 1 cent per share, despite a loss from discontinued operations of $470,000, or 6 cents per share. The fourth quarter of fiscal 1986 compares with a net loss of $3.9 million, or 99 cents per share, which included a loss of $2.8 million from discontinued operations in the corresponding quarter of fiscal 1985.

SUPERSHORTS

Signaling another move in its reorientation to the business market, **Apple Computer, Inc.** has established its own leasing arm. Through a joint venture with leasing firm **Dana Commercial Credit Co.** of Troy, Mich., Apple formed **Apple Commercial Credit**. Although primarily aimed at giving Apple resellers more flexibility in winning accounts, the program will also allow Apple marketing representatives to customize leasing deals directly with business customers.

■

Lotus Development Corp. announced plans to begin its second program to repurchase up to 1.5 million shares, or approximately 10% of the company's outstanding common stock. In July, Lotus completed a previous share repurchase plan begun in February, in which 1.65 million shares were purchased by the company.

Lotus also announced it has secured a commitment for the direct placement of $30 million of 8.55% notes due in 1991, with closing expected to take place this month. Proceeds of the placement will partially fund the share repurchase. **First Boston Corp.**, which will be responsible for executing the share repurchase program, is arranging placement of the notes on behalf of the company.

■

Siltec Corp. announced it is currently reducing its work force by approximately 15%. The cutbacks are a result of the current business downturn in the semiconductor industry, the consolidation of certain activities and improved manufacturing efficiencies.

In addition to the reduction in work force, the company will schedule some selective shutdowns depending on market conditions.

■

National Semiconductor Corp.'s point-of-sale (POS) systems subsidiary, **Datachecker/DTS**, is changing its name to **Datachecker Systems, Inc.** The change is being made to better reflect the firm's POS systems orientation, a spokeswoman said. The operation has been known as Datachecker/DTS since 1983, when National Semi acquired Data Terminals Systems, Inc. and merged it with its Datachecker operation.

■

Lockheed Corp. announced the opening of an **Artificial Intelligence Center** in the hills west of Stanford University in Stanford, Calif.

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The deadline for classified advertising is ten days prior to the issue desired. (That's six working days prior to the issue date). Ads may be sent in by mail. For camera-ready ads, a velox or negative is required. For ads to be typeset by us, enclose a layout if needed, along with any logs or artwork you would like to include in the ad. These must be dark and clear for reproduction purposes.

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For the **Computerworld Bulletin Board,** ads may be sent by mail, by telecopier or given over the phone. Space is available in **one column by one inch deep** units only. They are set up using a **simple format with standard typefaces and no borders or logos are allowed.** The cost of one standard unit is $160.00. These units may be combined to form deeper ads.

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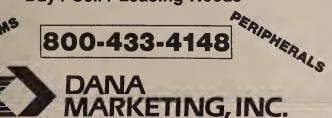
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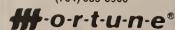
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NEWS

Mini provides link solution

4361 mainframes running DOS/VSE to the System/36 is accomplished, according to Prehn, with a mixture of seemingly disparate emulation boards and software, an in-house mainframe extract program and an off-the-shelf micro-to-mainframe package that was not designed to support the System/36.

Some analysts bemoan the fact that MIS should feel compelled to search for its own distributed processing solutions in the first place.

The bank's system is indicative of the problems DP and MIS shops are having connecting micros with IBM's Systems Network Architecture and mainframes, according to Peter Kibler, senior consultant with International Resource Development, Inc. in Norwalk, Conn. "There are a lot of people resorting to these ad hoc methods to transfer information," Kibler says. "It's a shame IBM doesn't provide a simple solution to these problems."

IBM has positioned the System/36 as the solution to departmental processing needs, but there has been widespread skepticism about whether it is adequate for the task in terms of function, power and compatibility with mainframes and micros.

This is a critical issue with organizations that, like the Morristown bank, desire a three-tiered processing environment — using micros, minis and mainframes — rather than the more standard two-tiered, micro-to-mainframe environment. "There's a need for both environments, and that's why we try to offer solutions for both," says Les Szabo, a spokesman for IBM's Information Systems Group in Rye Brook, N.Y.

At the National Computer Conference in June, IBM announced comprehensive micro-to-mainframe offerings. The products should solve many micro-to-mainframe problems that had not previously been addressed by IBM, Szabo says.

However, the products, designed to give IBM Personal Computer users greater access to data on IBM mainframes, are not scheduled to be available in their entirety until next year. In June, IBM also announced greater links between the System/36 and micros.

Morris County Savings Bank crafted its system, dubbed Infotrieve, after determining that it had excess processing power due to its purchase of a second System/36 in August 1985. "We found a mortgage loan origination system that we wanted, so we bought the System/36 to run it on," explains James C. Sprague, AIM's communications manager. "Once we got the 36 in, we decided to try and fit our Infotrieve system idea on it. We already had the System/36 and we weren't using it to the fullest. So it was, 'Let's try this and see if it works.' "

The department set up the additional System/36 as an information gateway between 85 Zenith Data Systems Corp. and IBM microcomputers and the two 4361s at Morristown headquarters.

"We wanted to bring together, in a single customer file, information from all customer loan data base systems," Prehn explains. "What we're doing is writing extract programs to bring fields of mainframe data from each system into one file on the System/36 that can be accessed by the end user."

The solution to AIM's needs was discovered through "serendipity," according to Sprague. The department found it could use Micro Tempus, Inc.'s Tempus-Link, a micro-to-mainframe communications package, to create a mainframe-to-mini virtual diskette transfer application.

The use of Tempus-Link in the virtual mainframe-to-virtual System/36 diskette transfer process was a new wrinkle, even to its vendor. "I was surprised to hear what they had done and thought it very clever," says Marie Cloutier, marketing specialist for Micro Tempus in Montreal. "Many users have asked us to support the System/36 to download mainframe data to System/36 PCs. We don't support it yet, although there's a movement in that direction."

"Tempus-Link was the only virtual diskette facility we brought in for the mainframes," Sprague explains. "The trial-and-error process came in when we tried to find emulator boards to work with it. We just kept trying various combinations to see which ones would work together in the same PC."

Eventually, a combination of Micro Plus, Inc.'s MP01 IBM 3270 terminal emulation board and software and IBM's 5250 Emulation Enhanced board and software worked.

With Infotrieve, the executives say, AIM is able to control the extract of files that end users see and eliminate the need to set up field-by-field access to the massive data bases on the mainframes.

At present, the main host-mini-micro application is in bringing mainframe data on customer loans to micro end users such as loan officers. Because the data can reside on various systems, a loan officer previously had to read through as many as three mainframe printouts and call other loan departments for complete customer data.

AIM crafted its own Customer Information File (CIF) system, which combines extracts from multiple mainframe data bases and makes the data on the System/36 available to micro users. The alternative, Prehn says, was to spend between $500,000 and $1 million on a mainframe system that, although offering the same CIF capability, included additional capabilities that AIM decided it could live without.

Host information is delivered to microcomputer end users "strictly for query-, analysis- and memo-type processing," according to Sprague. "It's simply for information. There is no uploading of data back to the mainframe, although we are planning for that within the next year."

A combined System/36 file on a customer is "simply a memo file and is not updated on a daily basis," Sprague says. The mainframe customer loan files are updated, however, whenever that customer's most recent transaction is recorded.

To update the System/36 files, AIM runs an extract program written in assembler language on each loan system, creating a mainframe sequential disk file, which is then stored in a specified mainframe virtual diskette.

The virtual diskette files are sent to the System/36 as virtual diskettes via IBM's PC Support/36 and Tempus-Link. Another option is to use Tempus-Link's batch processing utility to copy native mainframe files to native System/36 files with the help of Sterling Software, Inc.'s Teleprocessing Remote Access Control System on the mainframe.

"If the file is to be used by a PC end user with System/36 access and they want to use the file for PC

AIM's Sprague

applications such as Lotus 1-2-3, then we put the file on a virtual diskette," Sprague explains. "But if it's wanted to run queries against, then we place it on a native file."

A loan officer with a micro and System/36 terminal emulation capabilities can view these updated System/36 native files via IBM's Query/36 program. The PC Support/36 allows the user to massage that data into micro word processing, data base or spreadsheet applications.
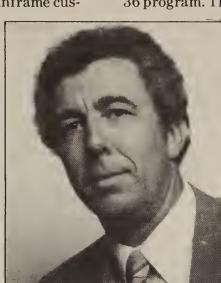
Before this system was developed, micro end users could only request printouts of mainframe data, which would then have to be rekeyed into the micro.

The CIF system on the System/36 is only the beginning of what the AIM department hopes to accomplish. "We want to be able to have someone sit down at a computer and type in information for analysis," Prehn says.

Developing your own solutions to DP problems requires "a large dose of perseverance," Prehn says. "Keeping the momentum going is a major problem, because you're dealing with an undefined, unchartered world. Vendors can't help with our systems integration problem, so we've got to fend for ourselves."

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>
> *'There are a lot of people resorting to these ad hoc methods to transfer information. It's a shame IBM doesn't provide a simple solution to these problems.'*
>
> — Peter Kibler
> **International Resource Development, Inc.**

COMPUTER INDUSTRY

MSA in market agreement

TDS first to license Information Expert

By James A. Martin

ATLANTA — Management Science America, Inc. (MSA) last week announced an agreement with Technicon Data Systems Corp. in which both companies will market one another's health care software products.

The multimillion dollar agreement calls for MSA to license its Information Expert fourth-generation reporting tool as well as financial and human resource systems from its Health Care Expert series to Technicon Data Systems.

MSA will also incorporate Technicon Data's Patient Accounting application into Health Care Expert.

First time

MSA said it is the first time Information Expert has been licensed to another software vendor for product development.

Technicon Data Systems will integrate MSA's technology into its Medi-

cal Information System for IBM mainframes.

MSA, which has already acquired two vertical market software firms this year, had discussed the possibility of a merger with Technicon Data last fall, according to Dee Goodnight, vice-president of marketing operations for MSA.

"We were already working with them on the marketing agreement prior to their being up for sale," Goodnight said.

"We had the option, but felt what we were doing was the best approach to increasing our visibility in health care," she explained.

Technicon Data Systems, headquartered in Atlanta, was formerly a subsidiary of Revlon, Inc. but was spun off after that company's merger with Pantry Pride, Inc. in 1985.

Technicon Data was purchased by its current president, John Whitehead, shortly after the Revlon-Pantry Pride merger.

The agreement between MSA and Technicon Data Systems will reportedly provide the two companies with a combined user base of some 270 health care organizations.

DG ends suit, settles at $52.5M

order to put an end to growing legal costs.

"This issue could go on for another three, four or five years," he said. "The time involved in pursuing the case outweighs the cost of settling it. It's just a matter of putting the issue behind us," Donoghue explained.

Analysts reacted with ambiva-

lence to the announcement and said that despite the financial setback, it would have little effect on DG's market position.

"The case is ancient history, and it involves a product that is no longer on the market. It really has nothing to do with current operations," said Jay Stevens, an analyst at Dean Witter Reynolds, Inc. in New York.

Even though the $29.4 million charge will significantly affect the company's balance sheet, Stevens downplayed the settlement, noting "1986 is a throwaway year for DG, anyway."

IBM picks bank subcontractor

ply it to other industries."

Despite its small size, Software Services' target market is very large financial institutions. Its current customers include The Bank of New York Co., Philadelphia National Bank and the New York branch of National Westminster Bank PLC.

Software Services' Retail Banking Delivery System (RBDS) runs on IBM's largest mainframes as well as IBM's 4700 series banking processors, linking the back office to retail branch teller terminals and automatic teller machines. RBDS includes an interface to Hogan's mainframe banking applications, Landry said.

IBM can be expected to continue the strategy of bringing in third-party vendors in markets such as manufacturing and insurance, according to International Data Corp. analyst Frank Gens.

"IBM's software is very horizontal, and IBM is depending on others for industry-specific products," Gens said. "With a company that is more than $50 billion, as you get more and more vertical, the markets get small-

er and smaller and less profitable. For IBM to develop an expertise level in each vertical market would not be as profitable as buying it from the outside."

Gens emphasized that agreements with firms such as Software Services and Hogan "are not just a way for IBM to sell more hardware. Clearly, a lot of customers pay good money for services to run their systems effectively," he said. "That's a business in itself, and IBM wants a piece of it."

While IBM has a strong business selling mainframes to the financial industry, Landry noted that it has faced stiff competition from Burroughs Corp., NCR Corp. and Automatic Data Processing, Inc.'s Bunker Ramo division selling terminals and processors at the branch and departmental level.

"IBM wants to supply the total solution at that level," Landry said. "That thrust gives a whole opening to third-party vendors in the financial services area."

The IBM and Software Services agreement will apply to a proposal that the two companies are currently presenting one of the U.S.'s 10 largest financial firms, which Landry declined to identify. Several other major financial users have been targeted for the joint approach, a Software Services statement said.

In micro retail, Businessland strong in big players market

ACTIVE ISSUES
Kathy Porteus

The golden days of microcomputer retail distribution may be over, but do golden investment opportunities now exist among computer retail stocks?

According to some analysts, investors need only consider Businessland, Inc. (BUSL — 9¼). In June, Businessland made headlines by announcing it would sell its own IBM Personal Computer clone. The company recently reported fiscal 1986 earnings of 21 cents per share, including an extraordinary tax benefit equaling 9 cents per share on sales of $404 million.

"Businessland is financially well managed, technically and strategically strong and controls its expansion extremely well," says Paul Evans, analyst with S. G. Warburg & Co. Assuming existing corporate tax rates, Evans estimates the company will earn 55 cents per share on $600 million in sales during fiscal 1987, ending June 30.

According to Evans, computer retailing has become a big players' game, as evidenced by the aggressive entry of regional holding companies such as Nynex Corp. and Pacific Telesis Group. Because IBM stopped authorizing new stores to carry its Personal Computers, retailers must now geographically expand through acquisition.

In the past two months, Businessland acquired Amerisource, a Midwestern chain, and Morris Decision Systems, Inc., a New York-based reseller. Evans says, "Businessland must get from the 100-store level to 200 stores, at which point it becomes a very big independent that is tough to knock down."

Michele Preston, analyst with Salomon Brothers, Inc., also recommends Businessland. She says Bu-

sinessland has recognized the direction of microcomputing toward corporate, multiuser environments that require value-added services and a nationwide presence.

Businessland is also a company-owned, vs. a franchise, operation. According to Preston, company-owned chains enable greater control and consistency across the store base regarding products, marketing programs, support levels and margins. Preston estimates Businessland will earn 70 cents per share in fiscal 1987.

Not everyone shares the view that company-owned chains are a more viable long-term strategy than franchises. "From an investment standpoint, there is no real difference between the two," says Franklin Morton, analyst with Alex Brown & Sons. "So much happens at the local level that a good or bad store manager or franchisee can have a major impact on how a specific unit performs."

Morton follows, but does not recommend, MBI Business Centers (MBOX — 6⅝) and Entre Computer Centers (ETRE — 3). Earlier this year, Businessland agreed to purchase MBI, but negotiations broke down before a final settlement was reached.

In mid-July, Entre's stock plummeted on news of a $5.8 million third-quarter loss. According to Morton, part of Entre's write-offs in the last quarter were of receivables from European franchisees that bought inventory on credit. "This indicated that some of these stores are on very shaky financial ground," Morton says. He says he is also concerned about Entre's unresolved lawsuits and the possibility of additional litigation.

In an effort to improve franchisee profitability, Entre is gradually reducing franchisee royalty fees to 5½ cents of every dollar sold.

Since it must absorb the loss in royalty revenue and bolster its own profitability, Entre has reduced its corporate work force and has closed or sold six of its company-owned stores.

"Investing in Entre's turnaround is highly speculative right now," Morton says. "There are no guarantees that all of the bad news is out."

Porteus is president of Strand Research Associates, a Centerville, Mass.-based company that provides customized research services for financial and high-tech firms.

Dbase III developer joins Migent

By Douglas Barney

INCLINE VILLAGE, Nev. — Migent Software, Inc. is poised to challenge Ashton-Tate's popular Dbase III microcomputer data base package with a data base engine for 32-bit microcomputers developed by Dbase author C. Wayne Ratliff.

Both Ratliff and Robert A. Byers, who is the coauthor of Dbase programmer's utilities, have been recently hired away from Ashton-Tate to become part of Migent's senior management team.
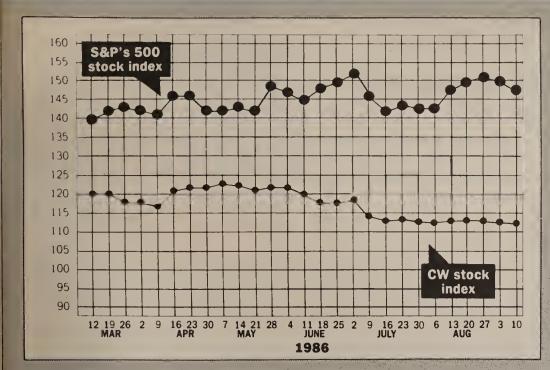
The data base engine will run on existing IBM and compatible 16-bit

computers, as well as the next generation of machines based upon the 80386 chip from Intel Corp. The system will run under Microsoft Corp. MS-DOS and Unix System V, the firm said.

A beta version will be released in first-quarter 1987, said Carl Gritzmaker, president of Migent and a former Ashton-Tate sales executive.

The data base engine will provide a foundation for applications such as spreadsheet and graphics. Optional interfaces such as Dbase, IBM's SQL or Query By Example will be available, Ratliff said.

COMPUTER INDUSTRY

Computerworld stock trading index

MITCHELL J. HAYES

S&P's 500 stock index

CW stock index

12 19 26 | 2 9 16 23 30 | 7 14 21 28 | 4 11 18 25 | 2 9 16 23 30 | 6 13 20 27 3 10
MAR | APR | MAY | JUNE | JULY | AUG
1986

All indexes reflect a historical base of 100 on Dec. 31, 1984, and trace stock market performance in relation to that base. The CW stock index represents the unweighted average performance of the six categories of computer industry stocks.

	9/3/86	9/10/86
Computer systems	113.3	**113.8**
Software and DP services	100.5	**98.6**
Peripherals and subsystems	100.2	**99.3**
Supplies and accessories	145.6	**142.7**
Semiconductors	78.5	**78.4**
Leasing companies	98.6	**95.4**
CW stock index	112.5	**112.3**
Standard and Poor's 500 stock index	149.5	**147.7**

Computer systems (chart 3/12 – 9/10)

Software and DP services (chart 3/12 – 9/10)

Semiconductors (chart 3/12 – 9/10)

Peripherals and subsystems (chart 3/12 – 9/10)

Leasing companies (chart 3/12 – 9/10)

Supplies and accessories (chart 3/12 – 9/10)

Computerworld stock trading summary

CLOSING PRICES WEDNESDAY, SEPTEMBER 10, 1986

EXCH		52-WEEK RANGE (1)		CLOSE SEPT 10 1986	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS					
O	APOLLO COMPUTER INC	18	9	12.00	-1.1	-8.6
O	APPLE COMPUTER INC	39	15	35.00	+0.3	+0.7
N	AT&T	26	20	25.00	+0.0	+0.0
N	BURROUGHS CORP	76	52	70.38	-1.1	-1.6
O	C P T CORP	7	4	4.25	+0.1	+3.0
N	COMPAQ COMPUTER CORP	18	8	15.13	-0.5	-3.2
O	COMPUTER CONSOLES INC	12	6	8.25	-0.3	-2.9
A	CONCURRENT COMP CORP	25	1	13.88	+0.6	+4.7
N	CONTROL DATA CORP OEL	27	15	26.13	+0.9	+3.5
N	CONVERGENT TECH	14	6	6.63	-0.4	-5.4
N	CRAY RESH INC	100	44	87.25	+2.9	+3.4
N	DAISY SYS CORP	32	8	9.13	-0.3	-2.7
N	DATA GEN CORP	50	30	35.75	-0.5	-1.4
N	DATAPOINT CORP	9	5	8.75	+0.3	+2.9
N	DIGITAL EQUIP CORP	105	51	99.50	-1.9	-1.8
N	ELECTRONIC ASSOC INC	7	4	4.38	+0.3	+6.1
N	FLOATING POINT SYS INC	46	12	13.00	+0.0	+0.0
N	GOULD INC	38	15	19.88	-0.4	-1.9
N	HARRIS CORP OEL	36	22	30.13	+1.0	+3.4
N	HEWLETT PACKARD CO	50	29	47.50	+1.3	+2.7
N	HONEYWELL INC	87	59	69.50	+0.1	+0.2
N	IBM	162	122	144.13	+8.0	+5.9
O	IPL SYS INC	4	1	2.75	+0.1	+4.8
N	ITT CORP	60	32	52.50	-0.8	-1.4
N	M A COM INC	19	13	15.13	+0.1	+0.8
N	MATSUSHITA ELEC INDL LTO	110	49	108.75	+11.3	+11.5
O	MENTOR GRAPHICS CORP	21	11	14.00	-0.4	-2.6
N	MOHAWK OATA SCI CORP	4	1	3.13	+0.0	+0.0
N	NBI INC	16	9	10.13	+0.0	+0.0
N	NCR CORP	57	31	55.13	+1.4	+2.6
N	PRIME COMPUTER INC	28	15	21.63	+0.0	+0.0
N	SPERRY CORP	77	46	76.75	+0.3	+0.3
O	STRATUS COMPUTER	26	15	21.75	-1.0	-4.4
O	SYMBOLICS INC	16	6	7.00	+0.6	+9.8
O	TANDEM COMPUTERS INC	40	13	35.50	-2.9	-7.5
N	TANOY CORP	45	32	34.00	-0.6	-1.8
N	TEXAS INSTRS INC	148	88	119.75	-2.1	-1.7
A	ULTIMATE CORP	35	11	15.63	-0.4	-2.3
A	WANG LABS INC - B	23	12	14.75	+0.3	+1.7
A	WANG LABS INC - C	23	11	14.38	-0.1	-0.9
N	XEROX CORP	72	46	56.75	+0.6	+1.1
	SUPPLIES & ACCESSORIES					
N	AMER BUSINESS PROOS	37	25	28.63	-0.3	-0.9
N	BARRY WRIGHT CORP	25	17	17.63	-0.9	-4.7
A	OUPLEX PROOS INC	23	17	20.38	-0.1	-0.6
N	ENNIS BUSINESS FORMS INC	28	15	24.38	-0.6	-2.5
N	3M CO	116	74	114.38	+3.1	+2.8
N	MOORE LTO	28	18	22.50	-0.6	-2.7
O	STANOARO REGISTER CO	50	31	38.00	+0.1	+0.3
N	WALLACE COMPUTER SVCS	50	33	42.50	-3.5	-7.6

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON; L=NATIONAL; M=MIOWEST; O=OVER-THE-COUNTER; S=SPLIT

O-T-C PRICES ARE BIO PRICES AS OF 3 P.M. OR LAST BIO
(1) TO NEAREST DOLLAR

EXCH		52-WEEK RANGE (1)		CLOSE SEPT 10 1986	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & DP SERVICES					
O	AOVANCEO COMP TECH	7	3	5.00	+0.3	+5.3
N	AOVANCEO SYS INC	20	11	15.63	-0.3	-1.6
N	AGS COMPUTERS INC	25	14	18.63	+0.4	+2.1
O	AMERICAN MGMT SYS INC	20	8	16.00	-1.0	-5.9
O	AMERICAN SOFTWARE INC	15	9	12.63	+0.4	+3.1
N	ANACOMP INC	7	3	3.25	-0.8	-18.8
O	ANALYSTS INTL CORP	10	4	4.50	+0.0	+0.0
O	ASHTON TATE	34	10	28.63	-0.6	-2.1
O	ASK COMPUTER SYS INC	15	7	11.75	-0.3	-2.1
A	ASTRADYNE COMP INO	3	1	2.41	-0.3	-10.4
N	AUTOMATIC OATA PROC	39	18	34.00	-2.8	-7.5
O	COMPUTER ASSOC INTL INC	25	10	23.50	+1.3	+5.6
O	COMPUTER HORIZONS CORP	15	10	10.63	-0.5	-4.5
O	COMPUTER NETWORK TECH	10	2	5.44	-0.8	-12.1
N	COMPUTER SCIENCES CORP	40	22	36.13	-0.4	-1.0
O	COMPUTER TASK GROUP INC	19	11	11.50	-0.4	-3.2
O	COMPUTONE SYS INC	1	1	1.25	-0.1	-9.1
O	COMSHARE INC	16	9	14.75	+1.0	+7.3
N	CULLINET SOFTWARE INC	20	8	8.00	-0.3	-3.0
O	CYCARE SYS INC	17	10	11.50	-0.3	-2.1
O	OUQUESNE SYS INC	33	11	29.25	-0.8	-2.5
N	GENERAL ELEC CO	83	56	77.75	+1.5	+2.0
N	GENERAL MTRS CORP	50	33	36.38	-0.9	-2.3
N	GTE CORP	60	38	57.25	-1.9	-3.2
O	HOGAN SYS INC	12	5	10.00	+0.1	+1.3
O	INFORMATION SCIENCES INC	4	1	1.50	+0.0	+0.0
O	INFOTRON SYS CORP	21	11	11.00	+0.3	+2.3
O	KEANE INC	16	7	7.50	+0.5	+7.1
N	LOGICON INC	43	27	28.38	-2.3	-7.3
O	LOTUS OEV CORP	42	15	38.50	-1.8	-4.3
O	MANAGEMENT SCI AMER	16	8	13.75	-0.1	-0.9
N	MCI COMM CORP	13	8	8.13	-0.3	-3.0
N	MICOM SYS INC	23	10	12.25	-0.5	-3.9
O	MICRO PRO INTL CORP	4	2	2.38	+0.2	+8.5
O	MICROSOFT CORP	36	26	30.25	+1.0	+3.4
O	NATIONAL OATA CORP	26	11	19.13	-0.8	-3.8
O	ON LINE SOFTWARE INT	16	6	11.25	-0.3	-2.2
O	ORACLE SYS CORP	29	14	15.25	-1.8	-10.3
N	PANSOPHIC SYS INC	36	18	29.63	+0.4	+1.3
N	PLANNING RESH CORP	24	14	22.13	+2.0	+9.9
O	POLICY MGMT SYS CORP	24	15	17.25	+0.3	+1.5
O	PROGRAMMING & SYS INC	11	5	8.00	-0.9	-9.9
O	REYNOLDS & REYNOLOS CO	42	18	36.50	-2.3	-5.8
O	SCIENTIFIC COMPUTERS INC	6	4	4.50	-0.3	-5.3
N	SEI CORP	28	15	19.00	+0.0	+0.0
O	SHAREO MEO SYS CORP	41	29	34.50	+0.1	+0.4
O	SOFTWARE AG SYSTEMS INC	22	13	18.63	-0.5	-2.6
A	SOFTWARE PUBG CORP	10	5	5.25	+0.1	+2.4
A	STERLING SOFTWARE INC	21	7	17.13	-0.5	-2.8
N	UCCEL CORP	24	13	23.63	+0.1	+0.5
N	URS CORP	18	10	15.25	-0.6	-3.9
O	VM SOFTWARE INC	32	17	26.50	-0.5	-1.9
	SEMICONDUCTORS					
N	ADVANCEO MICRO DEV	34	14	18.88	-0.3	-1.3
N	ANALOG OEVICES INC	25	14	18.13	+0.1	+0.7
N	ANALOGIC CORP	16	10	12.63	+0.1	+1.0
O	APPLIEO MAGNETICS CORP	20	12	14.25	+0.0	+0.0
O	AVANTEK INC	24	16	16.13	-1.6	-9.2
O	HAOCO CORP	7	3	3.38	-0.6	-18.2
O	INTEL CORP	32	16	21.75	-0.3	-1.1
O	MICRO MASK INC	7	2	3.25	+0.6	+23.8
N	MOTOROLA INC	50	29	43.25	+0.4	+0.9
N	NATIONAL SEMICONOUCTOR	16	9	10.25	-0.1	-1.2
N	TERAOYNE INC	30	17	20.75	+0.8	+3.8

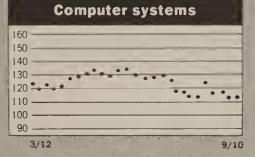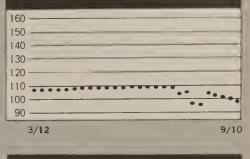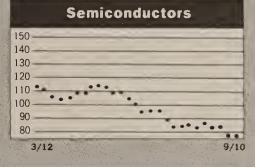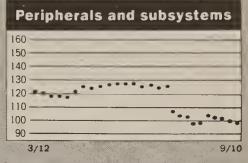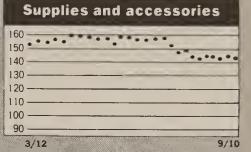| EXCH		52-WEEK RANGE (1)		CLOSE SEPT 10 1986	WEEK NET CHNGE	WEEK PCT CHNGE
	PERIPHERALS & SUBSYSTEMS					
A	AM INTL INC	9	3	6.13	-0.3	-3.9
A	ANDERSON JACOBSON INC	3	2	1.88	-0.3	-11.8
O	AST RESH INC	33	11	12.25	-0.3	-2.0
O	AUTOTROL CORP	10	6	6.63	-0.4	-5.4
O	AVANT GRAOE COMPUTING	9	3	3.38	+0.0	+0.0
O	BANCTEC INC	13	7	7.00	+0.0	+0.0
N	BOLT BERANEK & NEWMAN	48	29	43.00	+1.6	+3.9
N	CENTRONICS OATA COMP	8	4	7.38	-0.4	-4.8
A	CETEC CORP	9	6	5.88	-0.4	-6.0
A	COGNITRONICS CORP	6	3	2.63	+0.0	+0.0
N	COMPUGRAPHIC CORP	29	16	16.63	+0.6	+3.9
N	COMPUTERVISION CORP	19	9	13.88	+1.9	+15.6
N	CONRAC CORP	18	11	15.50	+0.1	+0.8
A	OATAPRODUCTS CORP	18	11	15.00	+0.8	+5.3
A	DATARAM CORP	18	5	8.63	-0.3	-2.8
O	DATA SWITCH CORP	9	5	6.13	+0.1	+2.1
O	DATUM INC	7	5	5.13	-0.1	-2.4
N	OECISION INOS CORP	15	9	9.38	+0.0	+0.0
O	ENOATA INC	8	3	5.38	+0.0	+0.0
O	EVANS & SUTHERLANO	27	17	22.75	+0.1	+0.6
N	FLOATING POINT SYS INC	46	12	13.00	+0.0	+0.0
O	GANOALF TECHNOLOGIES	8	5	5.88	-0.4	-6.0
N	GENERAL DATACOMM INO	15	8	9.38	+0.5	+5.6
N	HAZELTINE CORP	28	16	18.25	+0.0	+0.0
O	ICOT CORP	13	6	10.25	+0.0	+0.0
O	INFORMATION INTL INC	18	10	15.25	+0.1	+0.8
O	INTECOM INC	7	3	5.31	+0.0	+0.0
O	INTERLEAF INC	15	8	8.00	-1.0	-11.1
O	MEGADATA CORP	5	3	2.75	+0.0	+0.0
A	MSI OATA CORP	14	8	10.50	-1.1	-9.7
N	NASHUA CORP	28	12	23.13	-1.9	-7.5
O	NETWORK SYS CORP	26	10	14.13	+0.5	+3.7
N	NORTH AMERN PHILIPS CORP	48	32	37.50	-2.3	-5.7
N	NORTHERN TELECOM LTO	38	25	30.00	+0.8	+2.6
O	NOVELL INC	24	10	22.50	+2.0	+9.8
O	OMEX	1	0	0.38	+0.0	+0.0
N	PARADYNE CORP	11	6	6.00	+0.0	+0.0
A	PENRIL CORP	9	5	5.13	+0.3	+5.1
N	PLESSEY PLC	38	19	27.75	-0.3	-0.9
O	PRINTRONIX INC	15	11	13.50	-0.3	-1.8
O	QMS INC	16	6	12.50	-1.0	-7.4
O	RAMTEK CORP	7	2	5.50	-0.4	-6.4
N	RECOGNITION EQUIP INC	17	9	13.50	-0.5	-3.6
N	SANOERS ASSOC INC	63	29	59.88	+0.0	+0.0
O	SCAN TRON CORP	24	12	17.50	-0.4	-2.1
N	SCIENTIFIC ATLANTA INC	15	9	9.88	+0.3	+2.6
O	SEAGATE TECHNOLOGY	15	5	14.63	+0.3	+1.7
N	STORAGE TECHNOLOGY	7	1	2.50	-0.3	-9.1
O	SUN MICROSYSTEM INC	20	11	14.63	+0.5	+3.5
A	T-BAR INC	7	5	5.75	+0.1	+2.2
A	TAB PRODS CO	15	10	14.75	+0.5	+3.5
O	TANDON CORP	8	3	3.00	-0.1	-4.0
A	TEC INC	9	4	5.25	+0.3	+5.0
N	TEKTRONIX INC	65	47	62.13	+1.9	+3.1
N	TELEVIDEO SYS INC	4	2	2.88	+0.1	+4.5
N	TELEX CORP	69	42	57.75	+0.1	+0.2
N	TIMEPLEX INC	24	14	15.00	-1.3	-7.7
N	TITAN CORP	12	5	8.50	-0.1	-1.4
O	VISUAL TECHNOLOGY INC	1	0	0.81	-0.1	-13.3
O	WYSE TECH	19	7	13.88	-0.3	-1.8
	LEASING COMPANIES					
N	COMOISCO INC	25	12	18.25	-1.5	-7.6
N	CONTINENTAL INFO SYS	12	5	9.25	-0.4	-3.9
O	FINALCO GROUP INO	5	3	3.44	+0.0	+0.0
O	PHOENIX AMERN INC	6	2	3.75	+0.0	+0.0
O	SELECTERM INC	12	5	6.00	-0.8	-11.1
N	U.S. LEASING	46	32	44.00	+1.4	+3.2

COMPUTER INDUSTRY

DG ends Fairchild suit, faces $52.5M settlement

By Maura McEnaney

WESTBORO, Mass. — Data General Corp. last week wrote the final chapter in its eight-year legal saga over system software bundling with the announcement of a $52.5 million settlement with Fairchild Semiconductor Corp.

The settlement, announced two weeks before the end of DG's fiscal year, is the latest in a series of financial blows to DG.

The firm, which will take an after-tax charge of $29.4 million, has been struggling amidst slow sales, attrition of key executives and the unprecedented success of its chief rival, Digital Equipment Corp.

According to DG President Edson D. de Castro, the minicomputer vendor will take a charge of $1.10 per share in the fourth quarter ending Sept. 27, virtually assuring that DG will finish both the quarter and the year in the red.

DG has posted losses, some due to one-

time charges associated with layoffs and plant closings, in three of the last four quarters.

Case decided last month

The settlement came just a month after U.S. District Judge Marilyn Hall Patel enjoined DG from tying the use of its RDOS operating system software to the sale of its Nova minicomputer line [CW, Aug. 11].

The case was initiated by Fairchild, now a unit of Schlumberger Ltd., and hardware maker Digidyne Corp. in 1978 after DG refused to license the operating system to makers of Nova-compatible minis.

The agreement prevents the need for a trial to determine damages, which Patel had scheduled for early next year in San Francisco.

Data General spokesman Ken Donoghue said the company opted to settle the suit in

INSTANT ANALYSIS

"Everybody knows somebody who has been through a start-up company that's failed. Everybody's been burned. Experience is now behind us, whereas in the late 1970s, there was only naivete, high expectations and high hopes."

— **Allen Michels, former chairman of Convergent Technologies, Inc. and cofounder of The Dana Group**

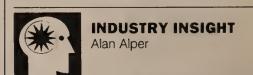# IBM picks banking subcontractor

By Clinton Wilder

LAWRENCE, Mass. — A small banking software developer recently became the first vendor to be chosen as an IBM subcontractor in a new Big Blue approach to win accounts in the financial services industry.

IBM will offer to the U.S.'s largest banks and financial institutions the retail banking products of Software Services of America, Inc., an IBM value-added reseller that recorded about $2.5 million in sales for the fiscal year ended June 30. The deal will allow customers to purchase Software Services' programs, implementation services and support directly from IBM.

Software Services thus became the first banking industry player to be chosen in IBM's Commercial Systems Integrator program in that market. Financial terms of the nonexclusive agreement were not disclosed.

IBM has recently been highly successful in acting as a systems integrator through its Federal Systems Division to win lucrative government contracts. Last week's agreement represents another IBM step toward implementing that strategy in financial services. Earlier this year, Big Blue signed a landmark OEM agreement with Hogan Systems, Inc. to sell Hogan banking software under the IBM label [CW, May 19].

"As opposed to the past, when IBM wanted to do all the work itself, now it is asking, Who can we bring in to help us solve the customer's problem?" said Bob Landry, vice-president of marketing for 7-year-old Software Services. "That's where we come in. IBM realizes that their hardware is not the total solution. They have had good success in the federal government with that approach and want to ap-

INDUSTRY INSIGHT
Alan Alper

BUNCH deck gets reshuffled

Tomorrow, the mainframe collective known as BUNCH will lose one of its charter members — and its only vowel.

The "U" in BUNCH, derived from Univac — the former name of Sperry Corp.'s computer unit — will disappear after Burroughs Corp. and Sperry shareholders put their expected imprimatur on Burroughs' acquisition of the Blue Bell, Pa., firm at concurrent stockholders' meetings in Dover, Del.

Quite possibly, the BUNCH's "B" — for Burroughs — will also become nonexistent once the combined corporation chooses a new name. The BUNCH acronym may fade into oblivion, but the way Burroughs acquired Sperry will surely be remembered for years.

In retrospect, Burroughs' indomitable leader, Chairman W. Michael Blumenthal, clearly outmaneuvered his august opponent, Sperry Chairman Gerald G. Probst. Like a grand master chess player, Blumenthal stayed moves ahead of his competitor. He carefully staked his claim and, in deliberate, measured paces, assumed control of key squares. He did not exert pressure until checkmate was the only possible outcome.

Blumenthal made his first entreaty in June 1985. It was an unsolicited but friendly acquisition offer of $65 a share. But Burroughs withdrew the offer within a week when Sperry dragged its heels. Sperry, for its part, said it wasn't interested anyway.

Alper is Computerworld's mid-Atlantic bureau correspondent.

Vendors voice anger over U.S. protection of chip industry

Prices may force production offshore

By Jeffry Beeler

PALO ALTO, Calif. — Representatives of 40 U.S. computer equipment vendors have reacted angrily to the U.S.'s recent antidumping accord with Japanese chip makers and have predicted the imminent demise of domestic systems manufacturing unless remedies are adopted soon.

Vendor representatives are charging that the federal government, in seeking to shield U.S. semiconductor suppliers from unfair Japanese competition, has dealt an unintentional but potentially disastrous blow to American firms that buy chips to build commercial products.

Faced with dramatically soaring semiconductor costs at home, many

U.S. systems and peripherals manufacturers are fast approaching the day when they will be forced to move their production facilities offshore to stay competitive, the officials warned.

Adding a note of urgency to the issue, an official with the American Electronics Association (AEA) underscored the plight in which much of the domestic systems industry now finds itself.

"Many producers, especially small and medium-size ones, will be out of U.S. production in a matter of months or even weeks," AEA Senior Vice-President Ralph Thompson said at a recent AEA briefing on the issue. "They can't afford to wait a year for action."
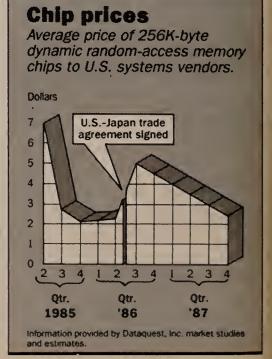
Executives from 40 vendors outlined the budding crisis for U.S. trade and Department of Commerce officials at the briefing.

The AEA-sponsored meeting was reportedly only the first of several such information exchanges that will bring together government and industry representatives during the next few weeks.

In general, the mood among the assembled vendor representatives was one of anger, according to Ivan Toledo, vice-president of marketing and sales at Sunnyvale, Calif.-based Deico Electronics, Inc., a memory module producer.

"The idea behind the government's efforts to protect the semiconductor industry was not very well conceived," Toledo said. "In trying to resuscitate the American random-access memory (RAM) business, which is already nearly dead, the government is contributing to the death of a much more important industry — the companies that use memory devices

MITCHELL J. HAYES

Chip prices
Average price of 256K-byte dynamic random-access memory chips to U.S. systems vendors.

Dollars

U.S.-Japan trade agreement signed

7
6
5
4
3
2
1
0

2 3 4 | 1 2 3 4 | 1 2 3 4

Qtr. **1985** | Qtr. **'86** | Qtr. **'87**

Information provided by Dataquest, Inc. market studies and estimates.